Adc75089 N bentham Adc76956 DNA homol Adc76953 DNA homol Adk58382 Plant DNA Adk58382 Plant DNA Adk58362 Plant DNA Adk5626 DNA homol Adc7666 DNA homol Adc5612 Plant DNA Adk56121 Plant DNA Adc76949 DNA homol Adc76949 DNA homol Adm45065 Insect re Adm45065 Insect re Adm45065 Insect re Adm45065 DNA homol Adm45065 Insect re Adm45065 DNA homol Adm45065 Insect re Adm45065 DNA homol Adm45065 DNA homol Adm45067 Insect re Adm45067 Insect re Adm45067 Insect re Adm45067 Insect re Adm45067 Choloropla Adc76965 DNA homol Adm45067 Insect re Insect re Adm45067 Insect re Insect re Adm45067 Insect re Insect re

OM nucleic

Run on:

Seguence:

Searched:

```
Chloroplast transit peptide; tomato; Rubisco; plant; ribulose-1,5-bisphosphate carboxylase; chorismate pyruvate lyase; CPL; enzyme; p-hydroxybenzoic acid; transgenic plant; gene; ds.

    186
    /*tag= b
    /note= "tomato Rubisco chloroplast targeting sequence"

                                                                                                                                                                                                                                                                                                               Chloroplast transit peptide-chorismate pyruvate lyase fusion gene
                                                                                                                                                                                                                                                                                                                                                                                            1. .495 /*tag= a /product= "chloroplast-targeted CPL fusion" 1. .186
                                                                                                                                                                                                                                                                                                                                                                                                                                                            . coli chorismate pyruvate lyase"
                                                                                                                                                                                                                       ALIGNMENTS
                                                  ADM45447
ADC75566
ADC75566
ADC59125
ADC59121
ADC59124
ADC76949
ADC76949
ADC76949
ADC76948
ADM45158
AAM170688
AAM15158
AAM15635
ADC76965
       ADC76956
ADC76953
ADK58382
ADK54321
                                    ADK57660
ADM44879
                                                                                                                                                                                                 AEB04212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В.
                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (DUPO ) DU PONT DE NEMOURS & CO
                                                                                                                                                                                                                                                            BP.
22-MAY-2001; 2001WO-US016661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       02-JUN-2000; 2000US-0209854P
                                                                                                                                                                                                                                                            684
                                                                                                                                                                                                                                                                                                                                                                                                                                              187. .492
/*tag= c
/note= "E.
                                                                                                                                                                                                                                                                                        (revised)
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                             .492
                                                                                                                                                                                                                                                                                                                                                          Lycopersicon esculentum.
Escherichia coli.
Chimeric.
ABA91838 standard; DNA;
               transit_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO200194607-A2
                                                                                                                                                                                                                                                                                        29-AUG-2003
15-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          13-DEC-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                              mat_peptide
                                                                         142.4
142.4
142.4
142.4
142.4
142.4
140.8
140.8
137.6
133.6
133.6
                                                                                                                                                                                                                                                                          ABA91838;
                                                                                                                                                                                                                                             RESULT 1
                                                                                                                                                                                                                                                     ABA91838
Aba91838 Chloropla
Abk47712 DNA seque
Adc2598 Tomato ru
Adv91636 C. paraps
Adv91636 C. paraps
Adv91638 C. paraps
Adv91618 Escherich
Aad06956 ubic gene
Aad06956 ubic gene
Aad2980 E. coll u
Aat2980 E. coll u
Aat2980 E. coll u
Abk47709 DNA seque
Adc25984 Escherich
Abk47709 DNA seque
Adc25984 Escherich
Aas90335 DNA encod
Aag7671 E. coll ub
Ach95439 Klebsiell
Ach9543 Klebsiell
                                               May 29, 2006, 10:41:28 ; Search time 915 Seconds (without alignments) 5100.554 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                  Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                         Description
                                                                                               1 atggetteetetgteattte......eggegteacegttgtaetaa
                                                                                                                                                   10489840
      GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
                                                                                                                                                Total number of hits satisfying chosen parameters:
                                                                                                                                   5244920 segs, 3486124231 residues
                                                                                                                                                                                                                                                                                                                                                                                  SUMMARIES
                                                                                                                                                                                       Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                   nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                            ADV91622
ADV91636
ADV91618
ADV91618
ADD06956
AAD06957
AATC982409
AAQ2409
ABA21837
ABA21837
ABA21837
ABA21837
ABA21837
ABA21837
ABA21837
ABA21835
AAQ67671
AAG676164
                                                                                                                                                                                                                                                                                                                                                                                                                      ABA91838
ABK47712
ADC25988
                                                                                                            IDENTITY NUC
Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                          genesequ2000s:*
genesequ2001as:*
genesequ2001bs:*
genesequ2002bs:*
genesequ2003as:*
genesequ2003cs:*
                                                                                                                                                                                                                                                                                                      geneseqn2003ds:*
geneseqn2004as:*
                                                                                                                                                                                                                                                                                                                       geneseqn2004bs:*
                                                                                                                                                                                                                                                                                                                             geneseqn20058:*
                                                                                                                                                                                                                                                                                                                                      geneseqn2006s:*
                                                                                                                                                                                                                             geneseqn1980s:*
geneseqn1990s:*
                                                                                                                                                                 seq length: 0
seq length: 200000000
                                                                             US-10-718-311-7
684
                                                                                                                                                                                                                      Geneseq 8:*
                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                       Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                       Score
                                                                               Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                       Scoring table:
```

0B 0B

Minimum I Maximum I

Database

Meyer K, Van Dyk DE, Viitanen PV;

Result š.

```
DNA
                                                                                    g
                                                                                                                                ò
                                                                                                                                                                   엄
                                                     ò
                                                                                                                                                                                                   The present nucleotide sequence is that of an open reading frame encoding CLO chloroplast-targeted chorismate pyruvate lyase (CPL) fusion protein TP-CLD candot chorismate pyruvate lyase (CPL) fusion protein TP-CLD (SPE GREE ABASOSS). PCR (see ABASOSS). PCR (see ABASOSS). PCR (see ABASOSS) are deed to generate a DNA fragment corresponding to the transit peptide of tomato Rubisco small cubunit and the first 4 amino acid residues of mature Rubisco. The DNA fragment was ligated into pET44-CPL). Which carries the Bacherichia coli CPL open reading frame (see ABASOSS). The TP-CPL construct is an example of expression cassettes of the invention that are designed for the high-CC everyone of TP-CPL in the chloroplast releases a novel polypeptide (see AMSOSS) that has full enzyme activity, converting chorismate to pHBA. A claimed plant comprising a CPL expression cassette is selected from soybean, rapessed, sunflower, cotton, corn, tobacco, alfalfa, wheat, barley, oats, sorghum, rice, Arabidopsis, sugarbeet, sugarcane, canola, millet, bean, pea, rye, flax or a forage grass. PHBA is a monomeric component of liquid crystal polymers which have application in the automative, electrical and other industries. (Updated on 29-AUG-2003 to catendardise OS field)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                   Producing para-hydroxy benzoic acid in green plant, comprises expression of unique expression cassette containing gene encoding chorismate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTGTTGTAAAGAGAGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATGCCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACCACGCAGCAAGCTTCACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CAAAACCTTGACATCACTTCCATTGCTAGCAATGGTGGAAGAGTTAGCTGCAGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CCTGCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAACGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              cerececrecarcecaacrecrecaerecrecrecrecaecarrecareacaaaacer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTTGAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTTGTCGAGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTTGAACAGCGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATTITIGITATIGICCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATTITIGITATGIGCCGATGGIGAACCGIGGCTIGCCGGICGTACCGICGTICCTGIGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                          of unique expression cassette containing gene encoding chorismate pyruvate lyase operably linked to specific chloroplast targeting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 684;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 684 BP; 160 A; 171 C; 179 G; 174 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.0%; Score 684; DB 6; L
llarity 100.0%; Pred. No. 1.4e-219;
Conservative 0; Mismatches 0;
                                                                                                                                                                     Claim 17; Page 57; 60pp; English.
                   WPI; 2002-226795/28
P-PSDB; AAM50959.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local Similarity
nes 684; Conserv
                                                                                                                                      ведпепсе.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Best Loc
Matches
요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
```

```
SNG1; sinapoylglucose accumulator 1; SMT; aromatic ester; plant; sinapoylglucose:malate sinapoyltransferase; glycosylated aromatic acid; malate conjugated aromatic acid; polymer synthesis; ubiC; TP-CPL; gene; carboxylic acid conjugated aromatic acid; chorismate pyruvate lyase; tomato Rubisco small subunit precursor; rbcS2; mutant; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Producing aromatic acid conjugates, involves contacting glycosylated aromatic acid with malate, alpha-hydrocarboxylic acid or alcohol in the presence of sinapoylglucose:malate sinapoyltransferase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene (SNG1, sinapoylglucose accumulator 1) encoding sinapoylglucose accumulator 1) encoding sinapoylglucose.malate sinapoyltransferase (SNT). SNT catalyses the substitution of a glucose moiety on a glycosylated aromatic acid with a malate moiety to form a malate conjugated aromatic acid. The enzyme is useful for producing malate conjugated aromatic acid. The enzyme is conjugated aromatic acids or aromatic esters. The malate conjugated aromatic acids are useful in the synthesis of various polymers. The present sequence representing the ORF (open reading frame) for TP-CPL (tomato Rubisco small subunit precursor for rbcs2-Bscherichia coli chorismate pyruvate lyase (CPL)) fusion protein is described in the
                                      CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The present invention relates to the isolation of Arabidopsis thaliana
Sequence 684 BP; 160 A; 171 C; 179 G; 174 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /*tag= a
/product= "TP-CPL fusion protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        of ORF for TP-CPL fusion protein.
                                                                                                                                                                                                                                        684
                                                                                                                                                                                                                                                                          TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (DUPO ) DU PONT DE NEMOURS & CO E I.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                        TTACCGGCGTCACCGTTGTACTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       examples of the present invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PV;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Example; Page 70; 72pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ВР
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Viitanen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                07-JUL-2000; 2000US-0216615P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  05-JUL-2001; 2001WO-US021283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ABK47712 standard; DNA; 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Lycoperaicon esculentum.
Synthetic.
Chimeric.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 2002-303779/34.
P-PSDB; AAU77942.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WO200204653-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               seguence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         18-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                17-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ABK47712;
                                                                                                                                                                                                                                                                                                      661
                                         541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Flint D,
                                                                                                       601
                                                                                                                                                                                                                                        661
                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 2
ABK 47112
ABK 47112
ABK 47712
ABK 477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACGITAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAGCGCCGITAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481 ACGTTAAGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGTTAGGACGCTTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
```

m

셤

ð

g

ò ద ઠે g 셤 ò 셤 ઠે g ò a 8 셤 ઠે g ઠે g

ઠે

ò

```
The invention relates to a novel isolated nucleic acid that encodes a UDP '-glucosyltransferase. The method of the invention may be used to transform microorganisms or green plant cells so that these produce a higher level of high-volume chemicals or materials, such as pHBA (p-hydroxybenzoic acid) ester glucoside which is an intermediate for pHBA, a monomer for liquid crystal polymers (LCPs) and starting material for methylparaben. Methylparaben is a preservative commonly used in the food production of these compounds and for identifying similar enzymes by tomatc/Bscherichia coli chimeric TP-CPL (chorismate pyruvate lyase) DNA toward.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 AGCATGGTTGCACCTTTCACTGGTCTCCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA 420
                                                                                                                                                                                                                                                                                                New nucleic acid encoding UDP-glucosyltransferase, useful for preparing cells that produce p-hydroxybenzoic acid glucose ester, also the new enzymes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 ATGGCTTCCTCTGTCATTCTTCAGCAGCTGTTGCCACACGCAGCATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CCTGCCCTGGATCCGCAACTGCTCGACTGGTTGCTGGAGGATTCCATGACAAAACGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTTGAACAGCAGGGAAAACGGTAAGCGTGACGATGATCGCGAAGGGTTTGTCGAGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AATGAAATCCCCGAAGAACTGCCGCTGCCGCAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CCTGCCCTGGATCCGCAACTGCTTGCTTGCTGGAGGATTCCATGACAAAACGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTTGAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG
                                             "Tomato/Escherichia coli chimeric TP-CPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match 100.0%; Score 684; DB 10; Length 684; Best Local Similarity 100.0%; Pred. No. 1.4e-219; Matches 684; Conservative 0; Mismatches 0; Indels 0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 684 BP; 160 A; 171 C; 179 G; 174 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                           Example 9; SEQ ID NO 41; 161pp; English.
 Location/Qualifiers
                                                                                                                                                                                                                                       PV;
                                                                                                                                                                                                         ы
                                                                                                                                                                                                         (DUPO ) DU PONT DE NEMOURS & CO
                                                                                                                                                                                                                                       Viitanen
                                                                                                                                                                            07-FEB-2002; 2002US-0355511P
                                                                                                                                              06-FEB-2003; 2003WO-US005863
               1. .684
/*tag= a
/product= '
protein"
                                                                                                                                                                                                                                       Meyer K, Van Dyk DE,
                                                                                                                                                                                                                                                                    WPI; 2003-767259/72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        the invention.
                                                                                                                                                                                                                                                                                    P-PSDB; ADC25989
                                                                                      WO2003066836-A2
                                                                                                                    14-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361
 Key
ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                           ô
                                                                                                                                120
                                                                                                                                                180
                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                     240
                                                                                                                                                                                                                                                                                                             300
                                                                                                                                                                                                                                                                                                                                          300
                                                                                                                                                                                                                                                                                                                                                                         360
                                                                                                                                                                                                                                                                                                                                                                                                       360
                                                                                                                                                                                                                                                                                                                                                                                                                                   420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            009
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       099
                                                                                                   9
                                                                                                                                                                                                      AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCCTGTTACAAAGAAG
                                                                                                                                                                                       CCTGCCCTGGATCCGCAACTGCTCGACTGGTTGCTGGAGGATTCCATGACAAACGT
                                                                                                                                                                                                                                                                                                                              TTTGAACAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG
                                                                                                                                                                                                                                                                                                                                                                                         TTTGAACAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCG
                                                                                                                                                                                                                                                                                                                                                                                                                               AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                     CTGTTCACATCATCACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                  ATTITIGITATIGICCGATGCTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACGTTAAGCGGGCCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACGTTAAGCGGGCCGGAGCTGGCGTTACAAAATTTGGGTAAAACGCCGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTGTTCACATCATCACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TGGGGGCGACGTTCCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT
                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          UDP-glucosyltransferase; pHBA; p-hydroxybenzoic acid ester glucoside; liquid crystal polymer; LCP; methylparaben; preservative; food; cosmetic industry; ds; gene; tomato; TP-CPL; chimeric;
                                         ;
0
             Length 684;
                                         Indels
            Score 684; DB 6; L
Pred. No. 1.4e-219;
                                  0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Tomato/Escherichia coli chimeric TP-CPL DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          chorismate pyruvate lyase; plant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BP
          100.0%;
100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ADC25988 standard; DNA; 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Lycopersicon esculentum.
Escherichia coli.
                        Similarity
       Query Match
Best Local Simil
Matches 684; (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  18-DEC-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                             61
                                                                                                                                                                                     121
                                                                                                                                                                                                                    121
                                                                                                                                                         61
                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                     301
                                                                                                                                                                                                                                                                                                                                                                                                  301
                                                                                                                                                                                                                                                                                                                                                                                                                               361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADC25988
```

ö

9

300 360

```
g
                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                            엄
                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                  유
                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                       ò
                                                                   540
                                                                                       900
                                                                                                        900
                                                                                                                                                 99
                                                                                                                                                                                                                                                                                                                  Hydroquinone glucoside; arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside; chorismate pyruate lyase; CPL; 4-hydroxycinnamoyl-CoA hydratase/lyase; HCHL; gene expression; hydroquinone; antiseptic; transgenic plant; genetically engineered microorganism; antioxidant; antimicrobial agent; anti-inflammatory agent; carcinogenic inhibitor; melanoma; cytostatic; anti-inflammatory agent; carcinogenic inhibitor; melanoma; cytostatic; rubisco small subunit precursor; transit peptide; chloroplast transit peptide; TP; chloroplast; gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Producing hydroguinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Tomato rubisco small subunit precursor TP-E.
                                                               481 ACGTTAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAACGCCGTTAGGACGCTAT
                                                                                                                                        TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT
                   ATTITGITATGIGCCGAIGGIGAACCGIGGCTIGCCGICGTACCGICGTICCTGIGCC
                                                                                       CTGTTCACATCACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                         541 CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                             TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT
                                                                                                                                                                                                                                                                                                rubisco small subunit precursor TP-E. coli CPL chimeric DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         coli CPL fusion protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Example 4; SEQ ID NO 33; 70pp; English
                                                                                                                                                                              TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                    TTACCGCCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                       ВР
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Flint
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                       ADV91622 standard; DNA; 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                            1. .684
/*tag= a
/product= '
                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                            Lycopersicon esculentum
Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Viltanen PV,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (MEYE/) MEYER K.
(VIIT/) VIITANEN P V.
(FLIN/) FLINT D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     expression cassette.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2005-057232/06.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             P-PSDB; ADV91623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US2004261147-A1
                                                                                                                                                                                                                                                                              10-MAR-2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 23-DEC-2004
                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Meyer K,
         421
                                               481
                                                                                        541
                                                                                                                             601
                                                                                                                                                601
                                                                                                                                                                    661
                                                                                                                                                                                                                                                                                                                                                                                                                               Chimeric
                                                                                                                                                                                                                             셤
                                              ઠે
                                                                В
                                                                                    ò
                                                                                                   g
                                                                                                                           ઠે
                                                                                                                                             d
                                                                                                                                                                   ò
                                                                                                                                                                                  셤
```

```
The present invention relates to methods and materials to produce hydroquinone glucoside (arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside) in genetically modified green plants and microorganisms. The method reliable upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxybenzoic acid (p-hydroxybenzoic acid; pHBA) in a biosynthetic pathway to produce arbutin. Plants and microbes can be genetically engineered to produce contain. Plants and microbes can be genetically engineered to produce thigh levels of pHBA either by functional expression of the bacterial protein chorismate pyruvate lyase (CPL) or by the expression of 4-bydroxycinnamoy-Loch hydroxycinnamoy-Loch hydratases/lyase (HCHL) or a combination of both. Arbutin is useful as an antioxidan, antimicrobial agent, anti-continuamentory agent and inhibitor of carcinogenesis (melanoma). The present sequence is tomato rubisco small subunit precursor (rbc62) transit peptide (chloroplast transit peptide; TP)-Escherichia coli CPL chimeric DNA. This sequence is present in the B. coli expression vector construct pET24a-TP-CPL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT 660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AATGAAATCCCCGAAGAACTGCCGCTGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCCTGTTACAAAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ccrecciredarccecaacrecredacrescretriscresaegarrecardacaaaacer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTTGAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 AIGGCTICCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAAIGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTTGAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATTITIGITATIGLECEGATGETGAACCETGECTTGCCGGTCGTACCGTCGTTCCTGTGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTGTGTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACGTTAAGCGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAAACGCCGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CCTGCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACGITAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.0%; Score 684; DB 14; Length 684; 100.0%; Pred. No. 1.4e-219; ive 0; Mismatches 0; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 684 BP; 160 A; 171 C; 179 G; 174 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 rraccecercaccerreracraa 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches 684; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   661
```

ö

```
424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             544
                                                                                                                                                                                                                                                                                       304
                                                                                                                                                                                                                                                                                                                                                                         364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ADV91643;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chimeric.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADV91643
ID ADV9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDS
                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                 요
                                                                                                                                                                                                                                                                                                                                                                                                          원
                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The present invention relates to methods and materials to produce hydroquinone glucoside (arbutin, 4-hydroxyphenyl-beta-D-glucopyranoside) in genetically modified green plants and microorganisms. The method relies upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxypenzoic acid (p-hydroxybenzoic acid, pHBA) in a biosynthetic pathway to produce arbutin. Plants and microbes can be genetically engineered to produce high levels of pHBA either by functional expression of the bacterial high levels of pHBA either by functional expression of the bacterial chort chorismate pyruvate lysse (CPL) or by the expression of 4-hydroxycinnamoyl-CoA hydratase/lyase (CPL) or a combination of both. Arbutin is useful as an antioxidant, antimicrobial agent, antimicrobial agent and inhibitor of carcinogenesis (melanoma). The inflammatory agent and inhibitor of carcinogenesis (melanoma). The Escherichia coli chorismate pyruvate lysse (CPL) and Arabidopsis thaliana UDP-glucosyltransferase (UGT72B1) chimeric DNA.
                                                                                                                                                                                  Hydroquinone glucoside; arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside;
                                                                                                                                                                                                   chorismate pyruvate lyase; CPL; 4-hydroxycinnamoyl-CoA hydratase/lyase; HCHL; gene expression; hydroquinone; antiseptic; transgenic plant; genetically engineered microorganism; antioxidant; antimicrobial agent; anti-inflammatory agent; carcinogenic inhibitor; melanoma; cytostatic; neoplasm; pHBA 1-hydroxylease; pHBA 1-H; pHBA; para-hydroxybenzoic acid; p-hydroxybenzoic acid; upp-glucosyltransferase; UGT72B1; gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Producing hydroguinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase
                                                                                                                                         parapsilosis pHB 1-H- E. coli CPL- A. thaliana UGT72B1 chimeric DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product= "Candida parapsilosis pHBA 1-H protein"
/transl except= (pos: 559. .561, aa:Trp)
2004. .3446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product= "Arabidopsis thaliana UGT72B1 protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Escherichia coli CPL protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Example 7; SEQ ID NO 47; 70pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2005-057232/06.
P-PSDB; ADV91605, ADV91619, ADV91631.
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Viitanen PV, Flint D;
                   BP
                   standard; DNA; 3452
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product= "541
                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              *tag= b
                                                                                                                                                                                                                                                                                                                                               Arabidopsis thaliana.
Candida parapsilosis.
Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (MEYE/) MEYER K.
(VIIT/) VIITANEN P V.
(FLIN/) FLINT D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          expression cassette.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US2004261147-A1
                                                                                                10-MAR-2005
                                                          ADV91636;
                   ADV91636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                              Chimeric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CDS
ADV91636
```

```
243
                                                                                                                                                                                                                                                                                                                 61 GCCCTGGATCCGCAACTGCTCGACTGCTTGTTGTTTTT 120
                                                                                                                                                                                                                                                                              303
                                                                                                                                                                                                                                                                                                                                                                                             363
                                                                                                                                                                                                                                                                                                                                                                                                                                               180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           421 GGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTA 480
                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Hydroquinone glucoside; arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside; chorismate pyruvate lyase; CPL; 4-hydroxycinnamoyl-CoA hydratase/lyase; HCHL; gene expression; hydroquinone; antiseptic; transgenic plant; genetically engineered microorganism; antioxidant; antimicrobial agent; anti-inflammatory agent; carcinogenic inhibitor; melanoma; cytostatic; neoplasm; pHBA 1-hydroxylase; pHBA; para-hydroxybenzoic acid; gene; de.
                                                                                                                                                                                                                                                                                                                                                                                                                             121 GAACAGGGAAAAAACGGTAAGCGTGACGATGATCCGCGAAGGTTTGTCGAGCAGAAT
                                                                                                                                                                                                                    244 GCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTT
                                                                                                                                                                                                                                                                                                                                                                                             GAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGGAAGGGTTTGTCGAGCAGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181 GAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         rigitalgicandordadconocitacoconocitacoconocitacoconocita
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        301 TTAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361 TTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTA
                                                                                                                                                                   184 CATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATCCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAAATCCCCGAAGAACTGCCGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTAAGCGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGG
                                                                                                              Gaps
                                                                                                           ö
                                                       Length 3452;
Sequence 3452 BP; 932 A; 730 C; 856 G; 934 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /*tag= a
/product= "Bscherichia coli CPL protein"
/transl except= (pos: 46. .48, aa:Cys)
522. .1961
                                                    Score 501; DB 14; L
Pred. No. 1.9e-157;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C. parapsilosis pHB 1-H- E. coli CPL chimeric DNA.
                                                                                                              ö
                                  73.2%; Scor.
100.0%; Pred. No. 1...
'... 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCGGCGTCACCGTTGTACTAA 501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADV91643 standard; DNA; 1971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10-MAR-2005 (first entry)
                                                                                                     Matches 501; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Candida parapsilosis.
Escherichia coli.
                                                    Query Match
Best Local Similarity
```

```
The present invention relates to methods and materials to produce hydroguinone glucoside (arbutin; 4-hydroxyphenyl-beta-b-glucopyranoside) in genetically modified green plants and microorganisms. The method relies upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxybenzoic acid; pHBA) in a biosynthetic pathway to produce arbutin. Plants and microbes can be genetically engineered to produce arbutin. Plants and microbes can be genetically engineered to produce high levels of pHBA either by functional expression of the bacterial protein chorismete pyravet lyase (CPL) or by the expression of 4-hydroxycinnamoyl-CoA hydratase/lyase (HCHL) or a combination of both. Arbutin is useful as an antioxidant, antimicrobial agent, anti-hifammatory agent and inhibitor of carcinogenesis (melanoma). The present sequence is Escherichia coli chorismate pyruvate lyase (CPL) DNA. This sequence is found in the E. coli expression vector construct
                                                                                    480
361 TTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGG 420
                                          663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hydroquinone glucoside; arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            chorismate pyruvate lyase; CPL; 4-hydroxycinnamoyl-CoA hydratase/lyase; HCHL; gene expression; hydroquinone; antiseptic; transgenic plant; genetically engineered microorganism; antioxidant; antimicrobial agent; anti-inflammatory agent; carcinogenic inhibitor; melanoma; cytostatic; neoplasm; pHBA; para-hydroxybenzolc acid; p-hydroxybenzolc acid; gene;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Producing hydroquinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase expression cassette.
                                                                                      421 GGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTA
                                            GGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "Escherichia coli CPL protein"
                                                                                                                                                                                                                                                                                                                                                                                                                             Escherichia coli chorismate pyruvate lyase (CPL) DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Example 4; SEQ ID NO 29; 70pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                   CCGCCGTCACCGTTGTACTAA 684
                                                                                                                                                                                501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ä
                                                                                                                                                             CCGGCGTCACCGTTGTACTAA
                                                                                                                                                                                                                                                                                              ВР
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Flint
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       16-JUN-2003; 2003US-00462162.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      16-JUN-2003; 2003US-00462162.
                                                                                                                                                                                                                                                                                              ADV91618 standard; DNA; 498
                                                                                                                                                                                                                                                                                                                                                                                   10-MAR-2005 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ರ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Meyer K, Viitanen PV,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (MEYE/) MEYER K. (VIIT/) VIITANEN P V.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2005-057232/06.
P-PSDB; ADV91619.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (FLIN/) FLINT D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US2004261147-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               23-DEC-2004.
                                                                                                                                                                                                                                                                                                                                        ADV91618;
                                            604
                                                                                                                                   664
                                                                                                                                                                                481
                                                                                                                                                                                                                                                                      ADV91618
ID ADV9
                                                                                                                                                                                                                                                    RESULT 7
                                                                             셤
                                                                                                                                 ò
                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The present invention relates to methods and materials to produce hydroquinone glucoside (arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside) in genetically modified green plants and microorganisms. The method relies upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxypenzoic acid; pHBA) in a biosynthetic pathway to produce arbutin. Plants and microbes can be genetically engineered to produce arbutin. Plants and microbes (CPL) or by the expression of 4-hydroxycinnamoyl-CoA hydratase/lyase (CPL) or by the expression of 4-hydroxycinnamoyl-CoA hydratase/lyase (HCHL) or a combination of both. Arbutin is useful as an antioxidant, antimicrobial agent, anti-inflammatory agent and inhibitor of carcinogenesis (melanoma). The present sequence is Candida parapsilosis PHBA 1-hydroxylasm (PHB 1-H) and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Producing hydroquinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTTTAAAGAGATCCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           244 GCCCTGGATCCGCAACTGCTCGACTGGTGTTGCTGGAGGATTCCATGACAAAACGTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCCCTGGATCCGCAACTGCTCGACTGTTGCTTGGAGGATTCCATGACAAAACGTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAACAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGCAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          rrerrargrecearegreacegreecrrecegreerecrererrergreage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGGTTAGGACGCTATCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
/product= "Candida parapsilosis pHBA 1-H protein"
/transl_except= (pos: 540. .542, aa:Trp)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 14; Length 1971;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Escherichia coli chorismate pyruvate lyase (CPL) chimeric DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 1971 BP; 550 A; 383 C; 484 G; 554 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4.9e-157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 499.4;
Pred. No. 4.9e
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Example 7; SEQ ID NO 54; 70pp; English.
                                                                                                                                                                                                                                                                                                                                        ä
                                                                                                                                                                                                                                                                                                                                      Flint
                                                                                                                                                        16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                  16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 99.8%;
Matches 500; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                        P-PSDB; ADV91605, ADV91619.
                                                                                                                                                                                                                                                                                                                                      Viitanen PV,
                                                                                                                                                                                                                                             (MEYE/) MEYER K.
(VIIT/) VIITANEN P V.
(FLIN/) FLINT D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 expression cassette.
                                                                                                                                                                                                                                                                                                                                                                                2005-057232/06
                                                                 US2004261147-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    184
                                                                                                                                                                                                                                                                                                                                        Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ч
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  544
                                                                                                                                                                                                                                                                                                                                                                                   WPI;
```

8 6 8 6 8 6 8 6 8

ŝ

```
247 (
                                                                                                                                                                                                                                                                                                                                                                                                                   307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    561
                                                                                                                                                                                                                                                                                                                                                                                                                                                          367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             801
           Ward TE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 9
AAD06957
  셤
                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ద
                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                          ô
                                                                                                                   306
                                                                                                                                      120
                                                                                                                                                          366
                                                                                                                                                                             180
                                                                                                                                                                                                 426
                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                        486
                                                                                                                                                                                                                                                          300
                                                                                                                                                                                                                                                                              546
                                                                                                                                                                                                                                                                                                360
                                                                                                                                                                                                                                                                                                                   909
                                                                                                                                                                                                                                                                                                                                      420
                                                                                                                                                                                                                                                                                                                                                          999
                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               p-hydroxybenzoic acid; pHB; aromatic pathway; carbon source; ubiC; chorismate pyruvate lyase; ppsA; phosphoenolpyruvate synthase; ppsP pEP synthase; tkKA; transketolase; aroC; chorismate synthase; aroA; 5-enolpyruvoylshikimate-3-phosphate synthase; EPSP synthase; aroL; shikimate kinase II; aroB; 3-debydroquinate synthase; DHQ synthase; aroG; 3-deoxy-D-arabino-heptulosonate-7-phosphate synthase; DHAP synthase; ds.
                                                                                               9
                                                                                          CTGGATCCGCAACTGCTCGACTGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                         CAGCAGGAAAAACGGTAAAGCGTGACGATGCATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                     CAGCAGGGAAAAAACGGTAAGCGTGACGATGATCCGCGAAGGTTTGTCCGAGCAAGAATGAA
                                                                                                                                                                                                                                                          241 TTATGTGCCGATGGTGAACCGTGCCTTGCCGGTCGTACCGTCGTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                               301 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                             CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                            credariccecaacrecreacregerariecregaearrecareacaaacerrreaa
                                                                                                                                                                                                ATCCCCGAAGAACTGCCGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                   181 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                       TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                    ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                         CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                             AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                          Gaps
                                                          ö
                                        Length 498;
                   C; 141 G; 121 T; 0 U; 0 Other;
                                                         Indels
                                    72.8%; Score 498; DB 14; L. 100.0%; Pred. No. 7.1e-157; ive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             encoding chorismate pyruvate lyase.
                                                                                                                                                                                                                                                                                                                                                                                                684
                                                                                                                                                                                                                                                                                                                                                                                                            481 GCGTCACCGTTGTACTAA 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (BECH-) BECHTEL BWXT IDAHO LLC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ВР
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                97US-0044094P
                   Sequence 498 BP; 114 A; 122
                                                                                                                                                                                                                                                                                                                                                                                                GCGTCACCGTTGTACTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAD06956 standard; DNA; 854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (first entry)
                                 Query Match
Best Local Similarity 100.
Matches 498; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                22-APR-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US6210937-B1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          06-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
pET24a(+)
                                                                                                                                                                                                                                                                             487
                                                                                                                   247
                                                                                                                                     61
                                                                                                                                                                           121
                                                                                                                                                         307
                                                                                                                                                                                                367
                                                                                                                                                                                                                                       427
                                                                                                                                                                                                                                                                                                                                                        607
                                                                                                                                                                                                                                                                                                                                                                           421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAD06956;
                                                                                                                                                                                                                                                                                                                                                                                                667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ubic
                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAD06956
                                                                                              a
                                                                                                                                  g
                                                                                                                                                                         셤
                                                                            ð
                                                                                                                   ઠે
                                                                                                                                                        ò
                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                  ŝ
                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                               셤
```

```
The present invention relates to a method of producing p-hydroxybenzoic acid (pHB) which comprises transforming microorganisms with plasmids acid (pHB) which comprises transforming microorganisms with plasmids carying selected genes of the common aromatic pathway and by conversion of carbon sources. The selected genes of the common aromatic pathway of the invention includes ubiC gene encoding chorismate pyruvate lyase, arog structural gene encoding 3-deoxy-D-arabino-heptulosonate-7-phosphate (DHAP) isoenzyme synthase (phe), tkth gene encoding transketolase, ppsh gene encoding phosphoenolpyruvate (PEP) synthase, arog gene encoding chorismate synthase, arof gene encoding chorismate synthase and arob converting chorismate to a selected aromatic compound. The method is used for converting thorismate to a selected aromatic compound. The method is aromatic compounds, particularly p-hydroxybenzoic acid. The present sequence is ubiC gene which encodes chorismate pyruvate lyase that
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     381 CTGGATCCGCAACTGCTCGACTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         800
                                                                                                                        Producing aromatic compounds, especially commercially acceptable levels of p-hydroxybenzoic acid, comprises developing genetically engineered bacteria that carry selected genes of the common aromatic pathway.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   441 CAGCAGGAAAAACGGTAAGCGTGACGATGATCGCCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          741 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTAACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGCGGGCCGGGGGTGGCGTTACAAAATTGGGTAAAAGGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     547 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGCTGTGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTGGATCCGCAACTGCTCGACTGGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 854;
Amaratunga
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 854 BP; 202 A; 200 C; 222 G; 230 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 72.8%; Score 498; DB 4; Le Best Local Similarity 100.0%; Pred. No. 9.4e-157; Matches 498; Conservative 0; Mismatches 0;
Johnson BF,
                                                                                                                                                                                                                                                           Claim 5; Col 31-32; 25pp; English.
Bulmer DK,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCGTCACCGTTGTACTAA
Watkins CS,
```

Φ

426

486 620 546 680 909 800

999

```
Ubiquinone-10; biosynthetic enzyme; ubiC; ubiA; gene; photosynthetic bacteria; recombinant production; plasmid pRSFAC; glutamate synthase; gene promoter; Rhodobacter capsulatus; transformant; MC9R/pRSFAC; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Genes coding for ubiquinone biosynthetic enzymes - useful for prodn. of ubiquinone-10 by transformed photosynthetic bacteria.
                     741 CGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAACAGAACTGTTTTTTACCG
  ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                    TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                         rrangreccearegreaaccereecrieceerceracereerecrerereaecerra
                                                                                                                                                                                                          AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                             681 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                      CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                   AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                     ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG

    E. coli ubiquinone biosynthetic enzyme genes ubiC and ubiA.

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /rpt_type= inverted
1892. .1911
/*tag= d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /rpt_type= inverted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAT29820 standard; DNA; 2000 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                              ecercaccerreracraa 818
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 1; Fig 2; 11pp; Japanese
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /*tag= a
/label= ubiC
890. .1762
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         94JP-00273071.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /*tag= b
/label= ubiA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  94JP-00273071.
                                                                                                                                                                                                                                                                                                                                                                                                                    GCGTCACCGTTGTACTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1868. .1887
/*tag= c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           P-PSDB; AAR97746, AAR97747.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    17-JAN-1997 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (ALPH-) ALPHA SHOKUHIN KK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      380. .877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 1996-262599/27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JP08107789-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  13-OCT-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         13-OCT-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  repeat_unit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               repeat_unit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       30-APR-1996
                                           501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAT29820;
                                                                                  427
                                                                                                                                                                   487
                                                                                                                                                                                                          621
                                                                                                                                                                                                                                                     547
  367
                                                                                                                                                                                                                                                                                                                                                                                                                      667
                                                                                                                         561
                                                                                                                                                                                                                                                                                                                                      607
                                                                                                                                                                                                                                                                                                                                                                                                                                                              801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAT29820
                                  셤
                                                                                                                     g
                                                                                                                                                                                                      엄
                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The present invention relates to a method of producing p-hydroxybenzoic acid (pHB) which comprises transforming microorganisms with plasmids carrying selected genes of the common aromatic pathway and by conversion of carbon sources. The selected genes of the common aromatic pathway of the invention includes ublC gene encoding chorismate pyruvate lyase, arof structural gene encoding Jecoxy-D-arabino-heptulosonate-7-phosphate (DHAP) isoenzyme synthase (phe), tktA gene encoding transketcloase, ppsA gene encoding phosphoenolpyruvate (PEP) synthase, arof gene encoding sencipyruvoylshikimate-3-phosphate (EBPS) synthase and aroB chorismate synthase, arol gene encoding sencipyruvate (PHQ) synthase. If aroA gene encoding 3-dehydroquinate (PHQ) synthase. The method is used for converting chorismate to a selected aromatic compound. The method is particularly used for the production of commercially acceptable levels of aromatic compounds, particularly p-hydroxybenzoic acid. The present sequence is pME2 plasmid which comprises ubiC, aroG, tktA and ppsA genes involved in the aromatic pathway
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      246
                                                                                                                                                              p-hydroxybenzoic acid; pHB; aromatic pathway; carbon source; ubiC; chorismate pyruvate lyase; ppsA; phosphoenolpyruvate synthase; ppsA; phosphoenolpyruvate synthase; aroA; pEP synthase; tktA; transketolase; aroC; chorismate synthase; aroA; 5-enolpyruvoylshikimate-3-phosphate synthase; BFSP synthase; aroL; shikimate kinase II; aroB; 3-dehydroquinate synthase; DHQ synthase; aroG; 3-deoxy-D-arabino-heptulosonate-7-phosphate synthase; DHAP synthase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           321 ATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGTTGTAAAGAGAGATCCCTGCC 380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGAGATGAA 500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 366
                                                                                                                       tkth and ppsh genes of the aromatic pathway.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Producing aromatic compounds, especially commercially acceptable levels of p-hydroxybenzoic acid, comprises developing genetically engineered bacteria that carry selected genes of the common aromatic pathway.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATGTCACACCCCCCCCCTTAACGCAACTGCGTGCGCTGTGTATTGTAAAGAGATCCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTGGATCCGCAACTGCTCGACTGGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           credarccecaacrecredacrecredarecredadarrecardacaaacerrrrgaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gapa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 6641 BP; 1567 A; 1698 C; 1853 G; 1523 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Amaratunga M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 6641;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 498; DB 4; Lengtn vor; Pred. No. 2.8e-156;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Johnson BF,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  72.8%; Scor...
100.0%; Pred. No. ...
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bulmer DK,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Claim 4; Col 31-40; 25pp; English.
AAD06957 standard; DNA; 6641 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       97US-0044094P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              98US-00064693
                                                                                                                         pME2 comprising ubic, arog,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (BECH-) BECHTEL BWXT IDAHO
                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity 100.
Matches 498; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Watkins CS,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 2001-280857/29
                                                                                                                                                                                                                                                                                                                                  Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              22-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       22-APR-1997;
                                                                                                                                                                                                                                                                                                                                                                           US6210937-B1
                                                                              06-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                    03-APR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ward TE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              441
                                                                                                                                                                                                                                                                                             DME2;
```

g

ò

g

ò

ઠે

σ

X88888888888888

```
Transgenic plants containing a bacterial gene which encodes an enzyme able to catalyse prodn. of an antiviral bactericidal, fungicidal or insecticidal factor are new. A preferred gene is ubic from E.coli (AAQ92409) which codes for chorismate-pyruvate lyase (AAR74742). The lyase catalyses conversion of chorismate to p-hydroxybenzoic acid and transgenic tobacco plants which express the active enzyme are resistant to tobacco mosaic virus
                                                                                                                                           bacterial DNA coding for enzyme catalysing prodn. of resistance factor - contg. e.g. antiviral p-hydroxy-benzoic acid.
                                                                             꿌
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BP
               94DE-04423022
                                                                                                                                                                                                                         Claim 3; Page 5; 7pp; German
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DNA; 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCGTCACCGTTGTAC
                                                                           Siebert M,
                                                                                                           WPI; 1995-186908/25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ABA91837 standard;
                                                                                                                            P-PSDB; AAR74742
                                             (HEID/) HEIDE
               30-JUN-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181
                                                                             'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ABA91837
                                                                             Heide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 12
ABA91837
ID ABA91.
XX
AC ABA91.
셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                        246
                                                                                                                                                                                                                                                                        439
                                                                                                                                                                                                                                                                                                      306
                                                                                                                                                                                                                                                                                                                                     499
                                                                                                                                                                                                                                                                                                                                                                      366
                                                                                                                                                                                                                                                                                                                                                                                                       559
                                                                                                                                                                                                                                                                                                                                                                                                                                       426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                859
          The present sequence comprises the ubiquinone biosynthetic enzyme genes ubiC and ubiA, which were cloned from the chromosomal DNA of B. coli (Kohara map phage DNA bank IFB (634); Cell 50, 495-508 (1987)). A large mat. of ubiquinone-10 can be produced by culturing photosynthetic bacteriat transformed with the novel plasmid pRSPAC, which contains the ubiC and ubiA genes and the glutamate synthase gene promoter, specifically the Rhodobacter capsulatus transformant MC9R/pRSFAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                       560 ATCCCGGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                      CTGGATCCGCAACTGCTCGACTGCTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                     440 CIGGAICCGCAACIGCICGACIGCCIGIIGCIGGAGGAIICCCAIGACAAAACGIIIIIGAA
                                                                                                                                                                                                                                                                                                                                                                   CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                     CAGCAGGGAAAAACGGTAAGCGTGACGATGATGCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                     ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   620 TIATGTGCCGATGGTGAACCGTGCCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                      TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                        ö
                                                                                                                                                                        Length 2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chorismate-pyruvate lyase gene; ubiC gene; transgenic plant; tobacco mosaic virus resistance; antiviral activity; p-hydroxybenzoic acid; ss.
                                                                                                                                        Sequence 2000 BP; 444 A; 462 C; 538 G; 556 T; 0 U; 0 Other;
                                                                                                                                                                                                        Indels
                                                                                                                                                                      Score 496.4; DB 2;
Pred. No. 5.1e-156;
0; Mismatches 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              E.coli chorismate-pyruvate lyase coding sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BP.
                                                                                                                                                                      Query Match
Best Local Similarity 99.8%;
Matches 497; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            94DE-04423022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCGTCACCGTTGTACTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           860 GCGTCACCGTTGTACTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAQ92409 standard; DNA; 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          30-JUN-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DE4423022-C1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            11-JAN-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            24-MAY-1995
                                                                                                                                                                                                                                      187
                                                                                                                                                                                                                                                                      380
                                                                                                                                                                                                                                                                                                     247
                                                                                                                                                                                                                                                                                                                                                                     307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  547
                                                                                                                                                                                                                                                                                                                                                                                                     500
                                                                                                                                                                                                                                                                                                                                                                                                                                     367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAQ92409
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAQ92409
```

a

ઠે

요

ઠે

a

ò

g

ઠે

셤

ò 셤 δ

ò

g

ઠે 셤 #XBX#X#X#X#X#X#X#X#X#

셤

õ

```
ö
                                                                                                                                                          187 ATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGTTGTAAAAAAGAATCCCTGCC 246
                                                                                                                                                                                                                                                               306
                                                                                                                                                                                                                                                                                             61 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                      366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                                                       121 CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   480
                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                               CTGGATCCGCAACTGCTCGACTGGTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    361 ACATCATCGACATTAACCCGGGACTTTATTGAGAGATAGGCCGTGATGCCGGGTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                           CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Arcccccaagaacreccerecreccaaagagrercerracregrracergaarrrre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                         Gaps
                                                                                                         ö
                                                      Length 495;
Sequence 495 BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                       0; Indels
                                              Query Match 72.4%; Score 495; DB 2; Le Best Local Similarity 100.0%; Pred. No. 7.2e-156; Matches 495; Conservative 0; Mismatches 0;
```

```
427
                                                                                                                                                           181
                                                                                                                                                                                                                                                                   487
                                                                                                                                                                                                                                                                                                                                       547
                                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                     307
                  61
                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                                                             607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ABK47709;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 13
                                                                                   셤
                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                        요
                                          ò
                                                                                                                        ð
                                                                                                                                                       셤
                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       the present sequence is that of the coding region of the Escherichia colistrain W3110 ubic gene in expression construct pET24a. The gene encodes chorismate pyruvate lyase (CPL, see AAM50968). It was obtained by PCR amplification of strain W310 genomic DNA using primers (see ABA91839-40) based on the published E. coli ubic gene. The CPL open reading frame is used in an expression cassette designed for the high-level production of p-hydroxybenzoic acid (pHBA) in green plants. The expression cassette comprises the CPL coding sequence operably linked to a promoter capable of dirving protein expression in higher plants. The expression as sequence encoding a chloroplast transit peptide, its natural cleavage site, and a small portion of a transit peptide donor protein fused to the N-terminus of CPL. The chloroplast targeting sequence targets the foreign protein to the chloroplast and aids in its uptake into the organelle. The cleavage site is unique to the transit peptide, and cleavage of the cleavage site is unique to the transit peptide and cleavage of the cleavage site is unique to the transit peptide donor protein movel polypeptide that has full enzyme activity, comprising the mature CPL enzyme and a small portion of transit peptide donor (see AAM50861). A polyper comprising the mature CPL enzyme and a small portion of transit peptide donor (see AAM50861).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Producing para-hydroxy benzoic acid in green plant, comprises expression of unique expression cassette containing gene encoding chorismate pyruvate lyase operably linked to specific chloroplast targeting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   soybean, rapeseed, sunflower, cotton, corn, tobacco, alfalfa, wheat, barley, oats, sorghum, rice, Arabidopsis, sugarbeet, sugarcane, canola, millet, bean, pea, rye, flax or a forage grass. pHBA is a monomeric component of ilquid crystal polymers which have application in the
                                                                                                                                                                        1. .495
/*tag= a
/partial
/poduct= "Chorismate_pyruvate_lyase"
/note= "the CDS does not include a stop codon"
                                 coli chorismate pyruvate lyase gene coding region.
                                                                    enzyme; p-hydroxybenzoic acid;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 495;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 495 BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              72.4%; Score 495; DB 6; Le
100.0%; Pred. No. 7.2e-156;
:lve 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            automotive, electrical and other industries
                                                                                                                                                                                                                                                                                                                                                                                                                            (DUPO ) DU PONT DE NEMOURS & CO E I.
                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Viltanen PV;
                                                                  Chorismate pyruvate lyase; CPL; e
transgenic plant; ubiC; gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 4; Page 55; 60pp; English
                                                                                                                                                                                                                                                                                                                                                                                           02-JUN-2000; 2000US-0209854P.
                                                                                                                                                                                                                                                                                                                                                        22-MAY-2001; 2001WO-US016661
(first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Local Similarity 100.
Matches 495; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Van Dyk DE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2002-226795/28.
P-PSDB; AAM50958.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local Similarity
                                                                                                                        Escherichia coli.
                                                                                                                                                                                                                                                                                   WO200194607-A2
 15-MAY-2002
                                 Escherichia
                                                                                                                                                                                                                                                                                                                    13-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sequence.
```

```
480
CTGGATCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 120
                                             366
                                                                          180
                                                                                                      426
                                                                                                                                    240
                                                                                                                                                                 486
                                                                                                                                                                                             300
                                                                                                                                                                                                                           546
                                                                                                                                                                                                                                                       360
                                                                                                                                                                                                                                                                                     909
                                                                                                                                                                                                                                                                                                                  420
                                                                                                                                                                                                                                                                                                                                                999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SNG1; sinapoylglucose accumulator 1; SNT; aromatic ester; sinapoylglucoses:malate sinapoyltransferase; glycoylated aromatic acid; salate conjugated aromatic acid; polymer synthesis; ubic; CPL; gene; carboxylic acid conjugated aromatic acid; chorismate pyruvate lyase;
                                                                         121 CAGCAGGGAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                         CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                             CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                              CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                      367 ATCCCCGAAGAACTGCCGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                            AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                     AGCGGGCCGGAGCTGGGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                      ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                  361 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Producing aromatic acid conjugates, involves contacting glycosylated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA sequence of ORF for CPL in pET24a E. coli expression construct.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /product= "CPL"
/note= "This sequence lacks a stop codon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               М
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Flint D, Meyer K, Viitanen PV;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (DUPO ) DU PONT DE NEMOURS & CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                뮵
                                                                                                                                                                                                                                                                                                                                                                                                                                       495
                                                                                                                                                                                                                                                                                                                                                                                                           681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   07-JUL-2000; 2000US-0216615P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       05-JUL-2001; 2001WO-US021283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ABK47709 standard; DNA; 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        18-JUN-2002 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ಹ
                                                                                                                                                                                                                                                                                                                                                                                                                         GCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                                                                                                                         GCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /partial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      . .495
*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2002-303779/34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        P-PSDB; AAU77941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WO200204653-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         17-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           pET24a; ds
```

ö 246

0; Gaps

9

247 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 306

1 Argreacecececerraacecaacrecerecerecerarreraaasaarecereee

> 유 ઠ

ð

```
The invention relates to a novel isolated nucleic acid that encodes a UDP -glucosyltransferase. The method of the invention may be used to transform microorganisms or green plant cells so that these produce a higher level of high-volume chemicals or materials, such as pHBA (p-hydroxybenzoic acid) ester glucoside which is an intermediate for pHBA, a monomer for liquid crystal polymers (LPB) and starting material for methylparaben. Methylparaben is a preservative commonly used in the food and cosmetic industries. The encoded enzymes may be used for in vitro production of these compounds and for identifying similar enzymes by sequence comparison. The current sequence is that of the Escherichia coli chorismate pyruvate lyase (CPL, UDiC) DNA of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           247 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACGTTGCTTCCTGTGTCAACGTTA 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301 AGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAAACGCCGTTAGGACGCTATCTGTTC 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                New nucleic acid encoding UDP-glucosyltransferase, useful for preparing cells that produce p-hydroxybenzoic acid glucose ester, also the new
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61 CIGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                          /partial
/product= "Escherichia coli chorismate pyruvate lyase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTTCCTTGTCTTAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 495; DB 10; Length 495; Pred. No. 7.2e-156;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 495 BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     72.4%; Scot.
100.0%; Pred. No. /...
... 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Example 9; SEQ ID NO 37; 161pp; English.
                                                                                                                                                                   /note= "No stop codon"
                                                                                                                                                                                                                                                                                                                                                  (DUPO ) DU PONT DE NEMOURS & CO E I.
                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                         Viitanen PV;
                                                                                                                                                                                                                                                                                                                07-FEB-2002; 2002US-0355511P.
                                                                                                                                                                                                                                                                            06-FEB-2003; 2003WO-US005863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local Similarity 100. Matches 495; Conservative
                                                                                                                                                  protein"
                                                                            .495
                                                                                         /*tag=
                                                                                                                                                                                                                                                                                                                                                                                         Meyer K, Van Dyk DE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 2003-767259/72.
P-PSDB; ADC25985.
                        Escherichia coli
                                                                                                                                                                                                       WO2003066836-A2
                                                                                                                                                                                                                                            14-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 487
                                                         Key
     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                               The present invention relates to the isolation of Arabidopsis thaliana gene (SNG1, sinapoylglucose accumulator 1) encoding sinapoylglucose malate sinapoyltransferase (SMT). SMT catalyses the sinapoylglucose:malate sinapoyltransferase (SMT). SMT catalyses the aubstitution of a glucose moiety on a glycosylated aromatic acid with a malate moiety to form a malate conjugated aromatic acids. Carboxyllo acid susful for producing malate conjugated aromatic acids, carboxyllo acid aromatic acids or aromatic esters. The malate conjugated aromatic acids are useful in the synthesis of various polymers. The present sequence representing the ORF (open reading frame) for chorismate pyruvate lyase (CPL) in pBT248 Bscherichia coli expression construct is described in the examples of the present invention
                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CIGGAICCGCAACIGCICGACIGGCIGIIGCIGGAGGAIICCAIGACAAAACGIIIIIGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                480
                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
   the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TATGLGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCCTCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                         CTGGATCCGCAACTGCTCGACTGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CAGCAGGGAAAAACGGTAAGCGTGACGATGCTCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGCGGGCCCGGAGCTGGCTTACAAAATTGGGTAAAAACGCCGTTAGGACGCCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGCGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CGACGTTCCCCCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           UDP-glucosyltransferase; pHBA; p-hydroxybenzoic acid ester glucoside; liquid crystal polymer; LCP; methylparaben; preservative; food; cosmetic industry; ds; gene; ubiC; CPL; chorismate pyruvate lyase.
                                                                                                                                                                                                                                                                                                                                                                                         Gaps
aromatic acid with malate, alpha-hydrocarboxylic acid or alcohol in presence of sinapoylglucose:malate sinapoyltransferase.
                                                                                                                                                                                                                                                                                                                                                                                         ;
0
                                                                                                                                                                                                                                                                                                                                                  Length 495;
                                                                                                                                                                                                                                                                                                              Sequence 495 BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                 72.4%; Score 495; DB 6; Le
100.0%; Pred. No. 7.2e-156;
iive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Escherichia coli chorismate pyruvate lyase DNA.
                                                   Page 68; 72pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ВЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADC25984 standard; DNA; 495
                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 100.0
Matches 495, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       18-DEC-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301
                                                     Example;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADC25984;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADC25984
요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EXXXXXXXXXXX
```

ò 엄 ò 셤 ò g ò ઠે g

ઠે

ö

Gaps

ö

120

9

426 240 486

```
The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags for identifying expressed sequence tags for identifying expressed cativity of (II) as useful in gene therapy techniques to restore normal cativity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a polypeptide in tissue, as molecular weight markers and as a food supplement. (II) and its binding partners are useful for treating disorders of sites expressing (II). (I) and (II) are useful for treating disorders involving aberrant protein expression or biological activity. The polypeptide and polynucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits to assess biodiversity and to produce other types of data and products dependent on DNA and anno acid sequences. Abs64197-Abs94564 represent novel human diagnostic coding sequences. Abs64197-Abs94564 represent novel human diagnostic coding sequences. Abs64197-Abs94564 represent novel human diagnostic coding sequences of the invention. Note: The sequence data for this electronic format directly from WIPO at the printed specification, but was obtained in electronic format directly from WIPO at the printed specification.
                                                                                                 480
               420
                                                        999
ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGTGTGGGGG
                                                                           CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Human; chromosome mapping; gene mapping; gene therapy; forensic;
food supplement; medical imaging; diagnostic; genetic disorder; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess biodiversity.
                                                                                                                                                                                                                                                                                                                                                                                                             DNA encoding novel human diagnostic protein #26139.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 1; SEQ ID NO 26139; 103pp; English.
                                                                                                                                                                                                                                                                                   AAS90335 Btandard; cDNA; 1207 BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30-MAR-2001; 2001WO-US008631.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   31-MAR-2000; 2000US-00540217.
23-AUG-2000; 2000US-00649167.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Tang YT;
                                                                                                                                        GCGTCACCGTTGTAC 681
                                                                                                                                                                               ccercaccerrerae 495
                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Drmanac RT, Liu C,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2001-639362/73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (HYSE-) HYSEQ INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          P-PSDB; ABG26148.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WO200175067-A2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                      13-FEB-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11-OCT-2001
             361
                                                      607
                                                                                             421
                                                                                                                                        667
                                                                                                                                                                           481
                                                                                                                                                                                                                                                                                                                            AAS90335;
                                                                                                                                                                                                                                                                                                       g
                                                      õ
                                                                                             유
                                                                                                                                      ઠે
```

```
7
                                                                                                                                                                                                                                                                                                                                                                                                                 952 TAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCCGTTAGGACGCTATCTGT 1011
                                                                                      246
                                                                                                               711
                                                                                                                                        247 CTGGATCCGCAACTGCTCGACTGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 306
                                                                                                                                                                771
                                                                                                                                                                                           CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 366
                                                                                                                                                                                                                  831
                                                                                                                                                                                                                                           426
                                                                                                                                                                                                                                                                   891
                                                                                                                                                                                                                                                                                           484
                                                                                                                                                                                                                                                                                                                     951
                                                                                                                                                                                                                                                                                                                                               544
                                                                                                                                                                                                                                                                                                                                                                                                 604
                                                                                                                                                                                                                                                                                                                                                                                                                                                    664
                                                                                                                                                                                                          772 CAGCAGGAAAAACGGTAAGCGTGACGATGATCGCCGAAGGGTTTGTCGCAGCAGAATGAA
                                                                                                   ATCCCGGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                    832 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                        T-TATGTGCCGATGGTGAACCGTGGCTTGCC-GGTCGTACCGTCGTTCCTGTGTCAACGT
                                                                                                                                                                                                                                                                                                                      485 TAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGGTTAGGACGCTATCTGT
                                                                                                                                                                                                                                                                                                                                                                                                  545 TCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                    605 GGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTAC
                                                              Сарв
                                                             7
                                  Length 1207;
          Sequence 1207 BP; 316 A; 265 C; 288 G; 338 T; 0 U; 0 Other;
                                                             Indels
                                  Score 472.8; DB 5;
Pred. No. 3.6e-148;
0; Mismatches 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  completed: May 29, 2006, 12:14:11
le : 937 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1132 CGGCGTCACCGTTGTACTAA 1151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     665 CGGCGTCACCGTTGTACTAA
                                    69.1%;
99.2%;
                                                            Matches 496; Conservative
                                                 Similarity
                                                                                                                                                                 712
                                                                                                                                                                                           307
                                                                                                                                                                                                                                           367
                                                                                                                                                                                                                                                                                              427
                                     Query Match
                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                time
X S
                                                                                                                                                             g
                                                                                                                                                                                                               g
                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                        ò
                                                                                                            셤
                                                                                                                                        ò
                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
```

Run on:

```
May 29, 2006, 20:59:50 ; Search time 746.985 Seconds (without alignments) 2380.132 Million cell updates/sec
                                                                                                                                                US-10-718-311-16
887
1 MQVWHMSHPALTQLRALRYC.....RLSGKPLLLTELFLPASPLY 170
GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
                                                      OM protein - nucleic search, using frame plus p2n model
                                                                                                                                                                                                                                                                                                                                 Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                        5244920 seqs, 3486124231 residues
                                                                                                                                                                                                                                                                                                                                                                                                              Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                              0.5
7.0
7.0
                                                                                                                                                                                                           BLOSUM62
Xgapop 10.0, Xgapext
Ygapop 10.0, Ygapext
Fgapop 6.0, Fgapext
Delop 6.0, Delext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              d Geneseq 8:*
1. geneseqn1908:*
2. geneseqn20008:*
3. geneseqn2018:*
5. geneseqn20118:*
6. geneseqn20118:*
7. geneseqn20138:*
7. geneseqn20138:*
8. geneseqn20138:*
9. geneseqn20138:*
                                                                                                                                                                                                                                                                                                                                                                 Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                 Title:
Perfect score:
                                                                                                                                                                                                              Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Database :
                                                                                                                                                                                Sequence:
                                                                                                                                                                                                                                                                                                        Searched:
```

The state of the s

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed and is derived by analysis of the total score distribution.

geneseqn2004bs:* geneseqn2005s:* geneseqn2006s:*

geneseqn2003cs:* geneseqn2003ds:* geneseqn2004as:*

. 10 10

	Description	Aba91838 Chloropla	Abk47712 DNA seque	Adc25988 Tomato/Es
SUMMARIES	_		ABK47712	10 ADC25988
	DB	9	9	10
	Length	684	684	684
d	Query Match	100.0	100.0	100.0
	Query Score Match Length DB ID	887	887	887
	Result No.	-	8	е

187. .492

mat_peptide

댎

,	•		000	703		CCSTOME	10 10 10 10 10 10 10 10 10 10 10 10 10 1
/)ی .	862	92.	3452		ADV91636	Adv91636 C. para
	ر ا	854	96.3	495		AAQ92409	Aag92409 E.coli c
	٠ (854	96.3	495	y o	ABA91837	Aba91837 Escheric
	0 0	854 854	96.3	4. 4. 0. 0. 0. 10	0	ABK4 / / 09 ADC25984	Abra/109 DNA sequ Adc25984 Escheri
	10	854	96.3	498	4	ADV91618	Adv91618 Escheri
	11	854	96.3	854		AAD06956	Aad06956 ubic gen
	13	851	95.3	1971	14	AADU695/ ADV91643	Aadubys/ pMEZ comp Adv91643 C. parat
	14	851	95.9	2000		AAT29820	Aat29820 E. coli
	15	811	91.4	1207		AAS90335	Aas90335 DNA enco
	17	673	75.9	645	-	ACH95439	Adde/8/1 E.COII U Ach95439 Klebsie
	18	417	47.0		0		Acf70957 Photorh
C	19	417	47.0	110000	2 5	ACF67367_40	Continuation (41
J	212	401	45.2		0	1	Adf02837 Bacteri
	8	- 1	21.0	630	н.	ABD08838	Abd08838 Pseudom
	mq	174.5	19.7	519	N	ADL04203	Ad104203 DNA enc
		171.5	19.3	26923		AAF28554	Aaf28554 Genomic
	26	167	18.8	100		ACD78860	Acd78860 E. coli
	27	165	18.6	100		ACD78859	Acd78859 E. coli
	ათ	4	16.5	1248	Н	ABD08757	Abd08757 Pseudon
	0	133.5	15.1	55839	~	ADN36893	Adn36893 X. albi
,	- - с	m	14.7	609	2	ADN36906	Adn36906 X. albi
ט	3 c	97.5	11.0	475	>	ADF02801 AAS97252	AGIUZBUI BACTEII AAB97252 Neisseri
	34	06	10.1	2127		ABA95459	Aba95459 Thermus
υ	32	0 0	101	o, c	m r		Aaa81730 N. menir
	3.0	0 6	10.1	349980		⊃.	Aaf21608 Neisseri
υ	38	88.5	10.0	. ~	Ŋ	AEF63232	Aef63232 Human U
	39	88	6.6	~	0	ADQ97948	Adq97948 Human
C	0 7	87	000	50,5	~ c	•	Acn44724 Mouse g
נ		86.5	0 00	-		ACF6738/ 43 ACF65388 04	
	43	98	9.7		0	ì	Abz39133 N. gonor
	4 t	85.5	9.0	2157	,	AAN70438	138 Stre
		ņ	y	/067	-	ADM02382	Admuzsez Human CL
						ALIGNMENTS	
RES	RESULT 1 ABA91838						
23	, an	80	standard;	DNA;	684	BP.	
¥ 2	ABA918	1838;					
444	29-AI 15-M	-AUG-2003 -MAY-2002	(revie (first	sed)	ry)		
2 円	Chloropl	roplast	transi	it peptide		-chorismate pyruvate	lyase fusion gene.
X & & &	Chloropl ribulose enzyme;	Chloroplast ribulose-1,5 enzyme; p-hy	trans 5-bisp ydroxy	ast transit peptide -1,5-bisphosphate ca p-hydroxybenzoic aca	ide; e ca	de; tomato; Rubisco; placarboxylase; chorismate acid; transgenic plant;	ant; e pyruvate lyase; CPL; gene; ds.
X 8 8 8	Lyco Esch Chime	Lycopersicon Escherichia (Chimeric.		esculentum. soli.			
\$ E L	Key		11	Location/Qualifiers 1495	/Oua	lifiers	
FT			``	/*tag= a		chloroplast-targeted (CPL fusion"
FF	transit	sit_peptide		186 *tag=	_		
E		100		= (tomato	to Rubisco chloroplast	st targeting sequence"

```
141 AlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThr 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Producing aromatic acid conjugates, involves contacting glycosylated aromatic acid with malate, alpha-hydrocarboxylic acid or alcohol in the presence of sinapoylglucose:malate sinapoyltransferase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SNG1; sinapoylglucose accumulator 1; SMT; aromatic ester; plant; sinapoylglucose:malate sinapoyltransferase; glycosylated aromatic acid; malate conjugated aromatic acid; polymer synthesis; ubic; TP-CPL; gene; carboxylic acid conjugated aromatic acid; chorismate pyruvate lyase; tomato Rubisco small subunit precursor; rbcS2; mutant; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The present invention relates to the isolation of Arabidopsis thaliana gene (SNG1, sinapoylglucose accumulator 1) encoding sinapoylglucose:malate sinapoyltransferase (SNT). SNT catalyses the substitution of a glucose moiety on a glycosylated aromatic acid with a malate moiety to form a malate conjugated aromatic acid. The enzyme is useful for producing malate conjugated aromatic acids, carboxylic acid conjugated aromatic acids, carboxylic acid
ProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeu
                                                                     CCTGTGTCAACGTTAAGCGGCCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGTTA
                                                                                                                 GlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAsp
                                                                                                                                             GGACGCTATCTGTTCACATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGAT
                                                                                                                                                                                                                      GCCGGGCTGTGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "TP-CPL fusion protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                         DNA sequence of ORF for TP-CPL fusion protein.
                                                                                                                                                                                                                                                      GluLeuPheLeuProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                       GAACTGTTTTTACCGGCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
1. .684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PV ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (DUPO ) DU PONT DE NEMOURS & CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Example, Page 70; 72pp, English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Viitanen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               05-JUL-2001; 2001WO-US021283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                07-JUL-2000; 2000US-0216615P
                                                                                                                                                                                                                                                                                                                                                         ABK47712 standard; DNA; 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /*tag= a
/product='
                                                                                                                                                                                                                                                                                                                                                                                                                          (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lycopersicon esculentum. Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2002-303779/34.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI; 2002-303779/3
P-PSDB; AAU77942.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WO200204653-A2
                                                                                                                                                                                                                                                                                                                                                                                                                          18-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              17-JAN-2002
                                                    101
                                                                                                                    121
                    412
                                                                                   472
                                                                                                                                                    532
                                                                                                                                                                                                                      592
                                                                                                                                                                                                                                                       161
                                                                                                                                                                                                                                                                                        652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Flint D,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chimeric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Key
                                                                                                                                                                                                                                                                                       윱
                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                    요
                                                                              g
                                                                                                                   ઠે
                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                       ò
                                             õ
                                                                                                                                                                                                                                                                                                                                                                                                                    The present nucleotide sequence is that of an open reading frame encoding chloroplast-targeted chorismate pyravate lyase (CPL) fusion protein TP-CPL (see AMASOSS). PCR (see ABASOSS) are deed to generate a DNA fragment corresponding to the transit peptide of tomato Rubisco small candent was ligated into pET24a-CPL, which carries the Becherichia coli capunit and the first 4 amino acid residues of mature Rubisco. The DNA cragment was ligated into pET24a-CPL. Which carries the Becherichia coli cPL open reading frame (see ABASOSS). The TP-CPL construct is an example of expression cassettes of the invention that are designed for the high-col production of p-hydroxybenzoic acid (pHBA) in higher plants. Cleavage of TP-CPL in the chloroplast releases a novel polypeptide (see AMSOSS) that has full arzyme activity, converting chorismate to pHBA. A claimed plant comprising a CPL expression cassette is selected from soybean, rapessed, sunflower, cotton, corn, tobacco, alfalfa, wheat, barley, oats, sorghum, rice, Arabidopsis, sugarbeet, sugarcane, canola, millet, bean, pea, rye, flax or a forage grass. PHBA is a monomeric component of liquid crystal polymers which have application in the automative, electrical and other industries. (Updated on 29-AUG-2003 to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValVal 100
                                                                                                                                                                                                                                                                                                   Producing para-hydroxy benzoic acid in green plant, comprises expression of unique expression cassette containing gene encoding chorismate pyruvate lyase operably linked to specific chloroplast targeting sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AAAGAGATCCCTGCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ThrLysArgPheGluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ValGluGlnAsnGlulleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MetGlnValTrpHisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LysGluIleProAlaLeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACADANCGTTTTGAACAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGCTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GTCGAGCAGAATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGG
                    coli chorismate pyruvate lyase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 684 BP; 160 A; 171 C; 179 G; 174 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              684
170
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-718-311-16 (1-170) x ABA91838 (1-684)
                                                                                                                                                                                     (DUPO ) DU PONT DE NEMOURS & CO E I.
                                                                                                                                                                                                                                                                                                                                                                                            Claim 17; Page 57; 60pp; English.
                                                                                                                                                      02-JUN-2000; 2000US-0209854P.
                                                                                                                    22-MAY-2001; 2001WO-US016661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2.04e-92
887.00
100.0%
100.0%
     /*tag= c
/note= "E.
                                                                                                                                                                                                                        Van Dyk DE,
                                                                                                                                                                                                                                                      WPI; 2002-226795/28.
P-PSDB; AAMS0959.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
                                                    WO200194607-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     172
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                        Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Best Local Si
Query Match:
DB:
     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ठे
```

```
ProvalSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeu 120
                                                                                                                                                                                    P-PSDB; ADC25989.
                                                          WO2003066836-A2
                                                                                              06-FEB-2003;
                                                                             14-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                         Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                  No.:
   Key
   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                              100
                                                                                                                                                                                                                                                                                                                                                                  ProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeu 120
                                                                                                                                                                                                                                                                                                                                                                                                         140
                                                                                                                                                                                             231
                                                                                                                                                                                                                                 291
                                                                                                                                                                                                                                                                       351
                                                                                                                                                                                                                                                                                                           411
                                                                                                                                                                                                                                                                                                                                               471
                                                                                                                                                                                                                                                                                                                                                                                      531
                                                                                                                                                                                                                                                                                                                                                                                                                           591
                                                                                                                                                                                                                                                                                                                                                                                                                                             AlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThr 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                651
                                                                                                                                                                           20
                                                                                                                                                                                                               40
                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                         80
aromatic acids are useful in the synthesis of various polymers. The present sequence representing the ORF (open reading frame) for TP-CPL (tomato Rubisco small subunit precursor for rbcS2-Escherichia coli chorismate pyruvate lyase (CPL)) fusion protein is described in the examples of the present invention
                                                                                                                                                                       MetGlnValTrpHisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCys
                                                                                                                                                                                                                        AAAGAGATCCCTGCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGTGGAGGATTCCATG
                                                                                                                                                                                                                                                                                                                                                                             CCTGTGTCAACGTTAAGCGGGCCGGAGCTGGCCTTACAAAAATTGGGTAAAACGCCGTTA
                                                                                                                                                                                   ThrLygArgPheGluGlnGlnGlyLygThrValSerValThrWetIleArgGluGlyPhe
                                                                                                                                                                                                                                                                                        ValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrp
                                                                                                                                                                                                                                                                                                     GTCGAGCAGAATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGG
                                                                                                                                                                                                                                                                                                                                                                                                        GlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAsp
                                                                                                                                                                                                            LysGlulleProAlaLeuAspProGluLeuLeuAspTrpLeuLeuGluAspSerMet
                                                                                                                                                                                                                                                                                                                             LeudrgGluIleLeuLeuCysAladspGlyGluProTrpLeuAlaGlyArgThrValVal
                                                                                                                                                                                                                                                                                                                                         TTACGIGAAATTTTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTTGC
                                                                                                                                                                                                                                                                                                                                                                                                                   GCCGGGCTGTGGGGGGGGGGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAACA
                                                                                                                                                                                                                                                               ACAAAACGTTTTGAACAGCAGGAAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    UDP-glucosyltransferase; pHBA; p-hydroxybenzoic acid ester glucoside; liquid crystal polymer; LCP; methylparaben; preservative; food; cosmetic industry; ds; gene; tomato; TP-CPL; chimeric; chorismate pyruvate lyase; plant.
                                                         Other;
                                                                                      684
0
0
0
0
0
                                                        0
                                                        ü,
                                                                                   Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                        0
                                                       Sequence 684 BP; 160 A; 171 C; 179 G; 174 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GluLeuPheLeuProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Tomato/Escherichia coli chimeric TP-CPL DNA
                                                                                                                                   Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GAACTGTTTTTACCGGCGTCACCGTTGTAC
                                                                                                                                                       (1-684)
                                                                                                                                                    US-10-718-311-16 (1-170) x ABK47712
                                                                                   2.04e-92
887.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADC25988 standard; DNA; 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Chimeric.
Lycopersicon esculentum
Escherichia coli.
                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                          Alignment Scores: Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                18-DEC-2003
                                                                                                                                                                                                                                                                                                           352
                                                                                                                                                                        -
                                                                                                                                                                                                             21
                                                                                                                                                                                                                                232
                                                                                                                                                                                                                                                                     292
                                                                                                                                                                                                                                                   41
                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                      472
                                                                                                                                                                                                                                                                                                                                               412
                                                                                                                                                                                                                                                                                                                                                                  101
                                                                                                                                                                                                                                                                                                                                                                                                                                             141
                                                                                                                                                                                                                                                                                                                             81
                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADC25988
                                                                                             Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT
8888888
                                                                                                                                                                        ò
                                                                                                                                                                                         셤
                                                                                                                                                                                                             ò
                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                                                                               쉽
                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
```

```
The invention relates to a novel isolated nucleic acid that encodes a UDP -glucosyltransferase. The method of the invention may be used to transform microorganisms or green plant cells so that these produce a higher level of high-volume chemicals or materials, such as pHBA (phydroxybenzoic acid) ester glucoside which is an intermediate for pHBA, a monomer for liquid crystal polymers (LCPB) and starting material for methylparaben. Methylparaben is a preservative commonly used in the food and cosmetic industries. The encoded enzymes may be used for in vitro production of these compounds and for identifying similar enzymes by sequence comparison. The current sequence is that of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       80
                                                                                                                                                                                                                                                                                                                                                                                                                                                     New nucleic acid encoding UDP-glucosyltransferase, useful for preparing cells that produce p-hydroxybenzoic acid glucose ester, also the new enzymes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GTCGAGCAGAATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAGAGTCTCGTTACTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MetGlnValTrpHisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         232 AAAGAGATCCCTGCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ThrLysArgPheGluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             172 Argeadericidecaráricidecececececerarice argeacrecerecerecerarier
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LysGluIleProAlaLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Tracercalatarretratescearesreaacesrescritecescreeracererr
                                                 chimeric TP-CPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 684 BP; 160 A; 171 C; 179 G; 174 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                684
170
0
0
                                                 "Tomato/Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Example 9; SEQ ID NO 41; 161pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (1-684)
                                                                                                                                                                                                                                                                                                               В І.
                                                                                                                                                                                                                                                                                                                                                           Viitanen PV;
                                                                                                                                                                                                                                                                                                                 ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-718-311-16 (1-170) x ADC25988
                                                                                                                                                                                                                   2003WO-US005863
                                                                                                                                                                                                                                                                  07-FEB-2002; 2002US-0355511P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2.04e-92
887.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                            (DUPO ) DU PONT DE NEMOURS
1. .684
/*tag= a
/product=
protein"
                                                                                                                                                                                                                                                                                                                                                           Meyer K, Van Dyk DE,
                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2003-767259/72.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the invention.
```

us-10-718-311-16.rng

```
160
                                 531
                                                                                                                                               591
                                                                                                                                                                                                                                                               651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Hydroquinone glucoside; arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside; chorismate pyruvate lyase; CPL; 4-hydroxycinnamoyl-CoA hydratase(lyase; HCHL; gene expression; hydroquinone; antiseptic; transgenic plant; genetically engineered microorganism; antioxidant; antimicrobial agent; anti-inflammatory agent; carcinogenic inhibitor; melanoma; cytostatic; anti-inflammatory agent; arcinogenic inhibitor; melanoma; cytostatic; rubisco small subunit precursor; transit peptide; chloxoplast transit peptide; TP; chloxoplast; gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Producing hydroquinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase expression cassette.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          inct= "Tomato rubisco small subunit precursor TP-E.
CPL fusion protein"
                                                                                                                   CCTGTGTCAACGTTAAGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGTTA
                                                                                        GlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAsp
                                                                                                                                                                                                        AlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThr
                                                                                                                                                                                                                                       GCCGGGCTGTGTGTGTTCCCGCCTGCGATTAAGCGGTAAAACGCTGTTGCTAACA
Tomato rubisco small subunit precursor TP-E. coli CPL chimeric DNA
                                                                                                                                                                                                                                                                                                                                                        GluteuPheteuProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Example 4; SEQ ID NO 33; 70pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
1. .684
/*tag= a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Flint
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADV91622 standard; DNA; 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /product=
coli CPL f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Lycopersicon esculentum.
Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Viitanen PV,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (MEYE/) MEYER K.
(VIIT/) VIITANEN P V.
(FLIN/) FLINT D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WPI; 2005-057232/06.
P-PSDB; ADV91623.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US2004261147-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10-MAR-2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          23-DEC-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Meyer K,
                                                                                                                                               532
                                                                                                                                                                                                                                                               592
                                                                                                                                                                                                                                                                                                                         161
                                                                                                                                                                                                                                                                                                                                                                                   652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADV91622;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Chimeric.
                                 472
                                                                                                                                                                                                        141
                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADV91622

XXX ADV916222

XXX ADV
                                                                                                                               셤
                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                      ò
```

The present invention relates to methods and materials to produce hydroquinone glucoside (arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside) in genetically modified green plants and microorganisms. The method relies upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxybenzolc acid (p-hydroxybenzolc acid, pHBA) in a blosynthetic pathway to produce

```
100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      160
                                                                                                                                                                                                                                                                                                                                                                                                               231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           411
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           80
                                                                                                                                                                                                                                                                                                                                                                                  20
                                                                                                                                                                                                                                                                                                                                                                                                                                               40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hydroquinone glucoside; arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside; chorismate pyruvate lyase; CPL; 4-hydroxycinnamoyl-CoA hydratase/lyase; HCHL; gene expression; hydroquinone; antiseptic; transgenic plant; genetically engineered microorganism; antioxidant; antimicrobial agent;
arbutin. Plants and microbes can be genetically engineered to produce high levels of pHBA either by functional expression of the bacterial protein chorismate pyruvate lyase (CPL) or by the expression of 4-hydroxycinnamoyl-CoA hydratase/lyase (HCHL) or a combination of both. Arbutin is useful as an antioxidant, antimicrobial agent, anti-inflammatory agent and inhibitor of carcinogenesis (melanoma). The present sequence is tomato rubisco small subunit precursor (rbcS2) transit peptide (chloroplast transit peptide; TP)-Escherichia coli CPL chimeric DNA. This sequence is present in the E. coli expression vector construct pBT24a-TP-CPL.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C. parapsilosis pHB 1-H- E. coli CPL- A. thaliana UGT72B1 chimeric DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 292 ACAAAACGITTIGAACAGGAAAAAAACGGIAAGGGTGACGATGATCCGCGAAGGGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          81 LeudrgGlulleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTGTGTCAACGTTAAGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLyBroLeuLeuThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     592 GCCGGGCTGTGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACA
                                                                                                                                                                                                                                                                                                                                                                                  1 MetGlnValTrpHisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCys
                                                                                                                                                                                                                                                                                                                                                                                                               172 Argeaggrerescaratereaeaeeeeeeerraaeeeaaereeereeeergeeerarrer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                232 AAAGAGATCCCTGCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GTCGAGCAGAATGAAATCCCCGAAGAACTGCCGCTGCTGCTGCCGAAAGAGTCTCGTTACTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTACGTGAAATTTTGTTATGTGCCGATGGTGAACCGTGCCTTGCCGGTCGTACGTCGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                  LysGluIleProAlaLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ThriysArgPheGluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPhe
                                                                                                                                                                                    Sequence 684 BP; 160 A; 171 C; 179 G; 174 T; 0 U; 0 Other;
                                                                                                                                                                                                                                   684
1170
0
0
                                                                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      681
                                                                                                                                                                                                                                                                                                                Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      uLeuPheLeuProAlaSerProLeuTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAACTGTTTTTACCGGCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                                                                (1-684)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BP.
                                                                                                                                                                                                                                                                                                                                                  US-10-718-311-16 (1-170) x ADV91622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     standard; DNA; 3452
                                                                                                                                                                                                                                   2.046-92
887.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10-MAR-2005 (first entry)
                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                    Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ម
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           101
                                                                                                                                                                                                                                                                                                                                                                                                                                                  21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADV91636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADV91636
                                                                                                                                                                                                                                                                                                   Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 5
          888888888888888
                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     유
                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
```

```
Producing hydroquinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase
          neoplasm; pHBA 1-hydroxylase; pHBA 1-H; pHBA; para-hydroxybenzoic acid;
p-hydroxybenzoic acid; UDP-glucosyltransferase; UGT72B1; gene; ds.
anti-inflammatory agent; carcinogenic inhibitor; melanoma; cytostatic;
                                                                                                                         /transl except= (pos: 559. .561, aa:Trp)
                                                                                                                                                                    /product= "Arabidopsis thaliana UGT72B1 protein"
                                                                                                         "Escherichia coli CPL protein"
                                                                                                                                                                                                                                                                                                                                                                            Example 7; SEQ ID NO 47; 70pp; English
                                                                                                                                                                                                                                                                                                                        P-PSDB; ADV91605, ADV91619, ADV91631.
                                                                       Location/Qualifiers
                                                                                                                                                                                                                         16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                          16-JUN-2003; 2003US-00462162
                                                                                               /*tag= a /product= "541. .1980
                                                                                                                                                                                                                                                                                              Viitanen PV,
                                  Arabidopsis thaliana.
Candida parapsilosis.
Escherichia coli.
Chimeric.
                                                                                                                                                                                                                                                          (MEYE/) MEYER K.
(VIIT/) VIITANEN P V.
(FLIN/) FLINT D.
                                                                                                                                                                                                                                                                                                                                                             expression cassette.
                                                                                                                                                                                                                                                                                                               WPI; 2005-057232/06
                                                                                                                                                                                      US2004261147-A1
                                                                                                                                                                                                                                                                                               Meyer K,
                                                                              Key
                                                                                                                 CDS
                                                                                                                                                   CDS
```

The present invention relates to methods and materials to produce hydroquinone glucoside (arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside) in genetically modified green plants and microorganisms. The method relies upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxypenzoic acid; pHBA) in a biosynthetic pathway to produce arbutin. Plants and microbes can be genetically engineered to produce high levels of pHBA either by functional expression of the bacterial protein chorismate pyravet lyase (CPL) or by the expression of 4-hydroxycinnamoyl-CoA hydrates/lyase (HCHL) or a combination of both. Arbutin is useful as an antioxidant, antimicrobial agent, anti-inflammatory agent and inhibitor of carcinogenesis (melanoma). The present sequence is Candida parapsilosis pHBA 1-hydroxylase (BHB 1-H)-Bscherichia coli chorismate pyruvate lyase (CPL) and Arabidopsis thaliana UDP-glucosyltransferase (UGT72B1) chimeric DNA

Sequence 3452 BP; 932 A; 730 C; 856 G; 934 T; 0 U; 0 Other;

```
3452
166
0
0
0
      Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                  Gaps:
      1.48e-88
862.00
100.0%
100.0%
97.2%
                               Similarity:
                       Percent Similarity:
Best Local Similari
gnment Scores:
                                        Query Match:
```

HisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIlePro 24

US-10-718-311-16 (1-170) x ADV91636 (1-3452)

ઠે

61 GCCCTGGATCCGCAACTGCTCGACTGTTGCTGGAGGATTCCATGACAAAACGTTTT 120 104 300 124 PheThrSerSerThrLeuThrArgAspPheIleGluileGlyArgAspAlaGlyLeuTrp 144 420 GlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeu 164 121 GAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAAT 180 9 44 64 84 Transgenic plants with increased content of resistance factor - contg. bacterial DNA coding for enzyme catalysing prodn. of resistance factor, e.g. antiviral p-hydroxy-benzoic acid. 241 TIGITIATGEGCCGATGGEGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACG 1 CATATGTCACACCCCGGGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATCCCT AlaLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPhe LeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThr LeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeu 301 TTAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTG 45 GluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsn 65 GlulleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIle TTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGG Transgenic plants containing a bacterial gene which encodes an enzyme Chorismate-pyruvate lyase gene; ubiC gene; transgenic plant; tobacco mosaic virus resistance; antiviral activity; E.coli chorismate-pyruvate lyase coding sequence. ŭ 170 481 CCGCCGTCACCGTTGTAC 498 BP. Severin 94DE-04423022. Claim 3; Page 5; 7pp; German 165 ProAlaSerProLeuTyr 94DE-04423022 AAQ92409 standard; DNA; 495 (first entry) p-hydroxybenzoic acid; ss. Heide L, Siebert M, WPI; 1995-186908/25. P-PSDB; AAR74742 Escherichia coli (HEID/) HEIDE 11-JAN-1996 30-JUN-1994; 30-JUN-1994; DE4423022-C1 24-MAY-1995. 25 85 105 125 361 AAQ92409; 145 ŀ RESULT 6 g 셤 셤 ò 음 ઠે g 셤 유 셤 ò ઠ 8 δ à ò

```
240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTGGATCCGCAACTGCTCGACTGGTTGCTGGAGGATTCCATGACAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         85
able to catalyse prodn. of an antiviral, bactericidal, fungicidal or insecticidal factor are new. A preferred gene is ubiC from E.coli (AAQ22409) which codes for chorismate-pyruvate lyase (AAR74742). The lyase catalyses conversion of chorismate to p-hydroxybenzoic acid and transgenic tobacco plants which express the active enzyme are resistant to tobacco mosaic virus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LeuaspproglnLeuLeuaspTrpLeuLeuGluaspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTATGTGCCGATGGTGAACCGTGGCTTGCCGTACCGTCGTTCTTATATGTGCCGTACCTAACGTTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ThrSerSerThrLeuThrArgAspPhelleGlulleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGlulleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATGTCACACCCCCCCCTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATCCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1leProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGCGGGCCGGGGCTGGCGTTACAAAATTGGGTAAAAGCCCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACATCATCGACATTAACCCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGACGITCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 pyruvate lyase; CPL; enzyme; p-hydroxybenzoic acid;
plant; ubiC; gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Escherichia coli chorismate pyruvate lyase gene coding region.
                                                                                                                                                                                                  Seguence 495 BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                              495
165
0
0
0
                                                                                                                                                                                                                                                                           Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-718-311-16 (1-170) x AAQ92409 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ВР
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                           8.33e-89
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ABA91837 standard; DNA; 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                   Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Escherichia coli
                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity
Query Match:
DB:
                                                                                                                                                                                                                                                     Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              15-MAY-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chorismate property transgenic property
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ABA91837;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ABAB1837

ID ABAB3

XX AC ABAB3

XX ABAB3

XX ABAB3

XX ABAB4

XX 
           888888888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
```

```
The present sequence is that of the coding region of the Escherichia colistrain W3110 ubic gene in expression construct pET34a. The gene encodes contributed by PCRR amplification of strain W3110 genemic DY that gene encodes amplification of strain W3110 genemic DNA using primers (see ABA$1839-40) based on the published E. coli ubic gene. The CPL open reading frame is used in an expression cassette designed for the high-level production of p-hydroxybenzoic acid (pHBA) in green plants. The expression cassette comprises the CPL coding sequence operably linked to a promoter capable of driving protein expression in higher plants. The cassette also has a sequence encoding a chloroplast transit peptide, its natural cleavage site, and a small portion of a transit peptide donor protein fused to the N-terminus of CPL. The chloroplast targeting sequence targets the foreign protein to the chloroplast and aids in its uptake into the organalle. The cleavage site is unique to the transit peptide, and cleavage of the cleavage site is unique to the transit peptide, and cleavage of the chimeric protein encoded by the cassette at this site releases a novel collimaric protein encoded by the cassette at this site releases a novel collimaric protein encoded by the cassette at this site releases a novel collimaric protein encoded by the cassette at this site releases a novel collimary and a small portion of transit peptide donor (see AAM50951). A plant comprising the CPL expression cassette is claimed, and may be sobben, rapeseed, sunflower, cotton, corn, tobacco, alfalfa, wheat, barley, oats, sorghum, rice, Arabidopsis, sugarbeet, sugarcane, canola, anillet, bean, pae, rye, flax or a forage grass. PHBA is a monomeric component of liquid crystal polymers which have application in the component of liquid crystal polymers which have application in the component of the configuration in dustries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       45
                                                                                                                                                                                                                                                                                                                                                                                                             Producing para-hydroxy benzoic acid in green plant, comprises expression of unique expression cassette containing gene encoding chorismate pyruvate lyase operably linked to specific chloroplast targeting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26 LeudspproGlnLeuLeudspTrpLeuLeuCludspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 CTGGATCCGCAACTGCTCGACTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           46 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                    /product= "Chorismate pyruvate lyase"
/note= "the CDS does not include a stop codon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-718-311-16 (1-170) x ABA91837 (1-495)
                                                                                                                                                                                                                                                          В 1.
                                                                                                                                                                                                                                                                                                     Viltanen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim 4; Page 55; 60pp; English.
                                                                                                                                                                                                                                                          (DUPO ) DU PONT DE NEMOURS & CO
                                                                                                                                                                                                                  02-JUN-2000; 2000US-0209854P
                                                                                                                                                                       22-MAY-2001; 2001WO-US016661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8.33e-89
854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                     Van Dyk DE,
                                                                                                                                                                                                                                                                                                                                            WPI; 2002-226795/28.
P-PSDB; AAM50958.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity:
                                                                                     WO200194607-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ø
                                                                                                                                                                                                                                                                                                     Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 seguence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Si
Query Match:
DB:
a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  à
```

^

```
substitution of a glucose molety on a glycosylated aromatic acid with a malate molety of form a malate conjugated aromatic acid. The enzyme is useful for producing malate conjugated aromatic acids, carboxylic acid conjugated aromatic acids or aromatic acids or aromatic acids or aromatic passent acquence representing the ORF (open reading frame) for chorismate pyravate lyase (CPL) in pET248 Escherichia coli expression construct is described in the examples of the present invention
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      46 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAenGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  301 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAGCGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                         121 CAGCAGGAAAAACGGTAAGCGTGACGATGATCGCCGAAGGGTTTGTCGAGCAGCAGAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               241 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGGTGTGGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                    MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  UDP-glucosyltransferase; pHBA; p-hydroxybenzoic acid ester glucoside;
liquid crystal polymer; LCP; methylparaben; preservative; food;
cosmetic industry; ds; gene; ubiC; CPL; chorismate pyruvate lyase.
                                                                                                                                                                                       BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                              495
0
0
0
0
0
                                                                                                                                                                                                                                            Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Escherichia coli chorismate pyruvate lyase DNA.
                                                                                                                                                                                                                                                                                                                                                                                  (1-495)
                                                                                                                                                                                                                                                                                                                                                                                US-10-718-311-16 (1-170) x ABK47709
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ВЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AlaSerProLeuTyr 170
                                                                                                                                                                                                                                            8.33e-89
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           18-DEC-2003 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DNA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                standard;
                                                                                                                                                                                                                                                                                  Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Escherichia coli.
                                                                                                                                                                                         Sequence 495
                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               56
                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ADC25984;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ADC25984
                                                                                                                                                                                                                                                                                                                       Query Match:
DB:
                                                                                                                                                                                                                                                ..
No
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADC25984

ID ADC

XX AC ADC

XX

XX

DE Becl

XX

XX

XX

WW

UDP

KW

1iq

KW

Cose

Cose
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT
                                                                                                                                                                                                                                                                    Score:
888888888888888
                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                        105
                                                                                                                          300
                                                                                                                                                                   125
                                                                                                                                                                                                       360
                                                                                                                                                                                                                                              145
                                                                                                                                                                                                                                                                                  420
                                                                                                                                                                                                                                                                                                                       165
                                                                                                                                                                                                                                                                                                                                                            480
                 85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SNG1; sinapoylglucose accumulator 1; SNT; aromatic ester; sinapoylglucose.malate sinapoyltransferase; glycosylated aromatic acid; malate conjugated aromatic acid; polymer synthesis; ubiC; CPL; gene; carboxylic acid conjugated aromatic acid; chorismate pyruvate lyase;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              in the
                                   LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                          The present invention relates to the isolation of Arabidopsis thaliana gene (SNG1, sinapoylglucose accumulator 1) encoding
             IleProGluGluLeuProLeuLeuProLysGluSerArgTyrIrpLeuArgGluIleLeu
                                                                                                                                                             SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                       AGCGGCCCGCAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                     ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                    ThrSerSerThrLeuThrArgAspPheileGluileGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Producing aromatic acid conjugates, involves contacting glycosylated aromatic acid with malate, alpha-hydrocarboxylic acid or alcohol in tyresence of sinapoylglucose:malate sinapoyltransferase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DNA sequence of ORF for CPL in pET24a E. coli expression construct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     codon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /partial
/product= "CPL"
/note= "This sequence lacks a stop
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ΞΙ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ႘
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Viitanen PV;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Example; Page 68; 72pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BP
                                                                                                                                                                                                                                                                                                                                                                                                                    GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                              AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               05-JUL-2001; 2001WO-US021283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   07-JUL-2000; 2000US-0216615P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ABK47709 standard; DNA; 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DU PONT DE NEMOURS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ಹ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1. .495
/*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2002-303779/34.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WPI; 2002-303779,
P-PSDB; AAU77941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WO200204653-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       18-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            17-JAN-2002
                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Flint D,
             99
                                               181
                                                                                    98
                                                                                                                                                               106
                                                                                                                                                                                                     301
                                                                                                                                                                                                                                        126
                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                     146
                                                                                                                                                                                                                                                                                                                                                                                              166
                                                                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                                                                                                                  481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         pET24a;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (DUPO)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                g
                                                                                    ò
                                                                                                                                                             ò
                                                                                                                                                                                           g
                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                셤
```

145

420

180

65

25 9 45 240 105 300 125 360

```
셤
                셤
                                                  8
                                                                             g
                                                                                                                                                                   ò
                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                       The invention relates to a novel isolated nucleic acid that encodes a UDP-glucosyltransferase. The method of the invention may be used to transform microorganisms or green plant cells so that these produce a higher level of high-volume chemicals or materials, such as pHBA (p-hydroxybenzoic acid) ester glucoside which is an intermediate for pHBA, a monomer for liquid crystal polymers (LCPs) and starting material for methylparaben. Methylparaben is a preservative commonly used in the food and commettic industries. The encoded enzymes may be used for in the food production of these compounds and for identifying similar enzymes by sequence comparison. The current sequence is that of the Escherichia coli chorismate pyruvate lyase (CPL, UDiC) DNA of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CAGCAGGGAAAAACGGTAAGCGTCACGATGATCCGCGAAGGGTTTGTCGAGAGAAGAA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  45
                                                                                                                                                                                                                                                                                                                           New nucleic acid encoding UDP-glucosyltransferase, useful for preparing cells that produce p-hydroxybenzoic acid glucose ester, also the new
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LeudapproGlnLeuLeudapTrpLeuLeuGludapSerMetThrLygArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TTATGTGCCGATGGTGAACCGTGGCTTGCCGTCGTACCGTTCCTGTGTCTAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATGICACACCCCCCCCTIAACCCAACTCCCTCCCCTCCCTATIGTAAAGAGATCCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             crecarcecaacrecreacreacrearecrearecrearecarrecaraaacerrrreaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                11eProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                    coli chorismate pyruvate lyase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 495 BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4 4 9 5
0 0 0
0 0 0
0 0 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                  Example 9; SEQ ID NO 37; 161pp; English.
                                     /partial
/product= "Escherichia protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-16 (1-170) x ADC25984 (1-495)
                                                                                 note= "No stop codon"
                                                                                                                                                                                                                          (DUPO ) DU PONT DE NEMOURS & CO E I.
location/Qualifiers
                                                                                                                                                                                                                                                      Viitanen PV;
                                                                                                                                                                                               07-FEB-2002; 2002US-0355511P.
                                                                                                                                                                     06-FEB-2003; 2003WO-US005863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8.33e-89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            854.00
100.0%
100.0%
96.3%
                            Ø
             . .495
*tag=
                                                                                                                                                                                                                                                      Van Dyk DE,
                                                                                                                                                                                                                                                                                 WPI; 2003-767259/72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity:
                                                                                                                                                                                                                                                                                                 P-PSDB; ADC25985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity
Query Match:
DB:
                                                                                                              WO2003066836-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
                                                                                                                                        14-AUG-2003
                                                                                                                                                                                                                                                        Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98
                                                                                                                                                                                                                                                                                                                                                       enzymes.
                                                                                                                                                                                                                                                                                                                                        cella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ..
No
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score:
```

셤

ò

g

ò

셤

ò

ઠે

g

ò

```
165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The present invention relates to methods and materials to produce hydroquinone glucoside (arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside) in genetically modified green plants and microoraganisms. The method relies upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxybenzoic acid; pHBA) in a biosynthetic pathway to produce arbutin. Plants and microbes can be genetically engineered to produce high levels of pHBA either by functional expression of the bacterial
                                                                                                                                                                                                                                                                                              480
                                                                                                                    145
                                                                                                                                                                            420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hydroguinone glucoside; arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Producing hydroquinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase expression cassette.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 chorismate pyruvate lyase, CPL, 4-hydroxycinnamoyl-CoA hydratase/lyase, HCHL, gene expression, hydroquinone, antiseptic, transgenic plant; genetically engineered microorganism, antioxidant, antimicrobial agent, anti-inflammatory agent, carcinogenic inhibitor; melanoma; cytostatic, neoplasm; pHBA; para-hydroxybenzoic acid; p-hydroxybenzoic acid; gene;
SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                       ThrSerSerThrLeuThrArgAapPhe11eGlu11eGlyArgAapAlaGlyLeuTrpGly
                                                                                                                                                                               361 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                      146 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                 421 CGACGITCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /product= "Escherichia coli CPL protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Escherichia coli chorismate pyruvate lyase (CPL) DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Example 4; SEQ ID NO 29; 70pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Flint
                                                                                                                                                                                                                                                                                                                                                           AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                      495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADV91618 standard; DNA; 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10-MAR-2005 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    *tag= a
                                                                                                                                                                                                                                                                                                                                                                                                                      GCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ρ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (MEYE/) MEYER K.
(VIIT/) VIITANEN P V.
(FLIN/) FLINT D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 2005-057232/06.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Meyer K, Viitanen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   P-PSDB; ADV91619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US2004261147-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    23-DEC-2004
      901
                                                                                                                       126
                                                                                                                                                                                                                                                                                                                                                              166
                                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADV91618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADV91618
```

Wed

```
61 CTGGATCCGCAACTGCTCGACTGCTGTTGCTGGAGGATTCCATGACAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  p-hydroxybenzoic acid; pHB; aromatic pathway; carbon source; ubiC; chorismate pyruvate lyase; ppsA; phosphoenolpyruvate synthase; pps psB synthase; tkA; transketolase; aroC; chorismate synthase; aroA; 5-enolpyruvoylshikimate-3-phosphate synthase; BPS synthase; aroL; shikimate kinase II; aroB; 3-dehydroquinate synthase; DHQ synthase; aroG; 3-deoxy-D-arabino-heptulosonate-7-phosphate synthase; DHAP synthase; ds.
protein chorismate pyruvate lyase (CPL) or by the expression of 4-hydroxyciunamoyl-CoA hydratase/lyase (HFLL) or a combination of both. Arbutin is useful as an antioxidant, antimicrobial agent, anti-inflammatory agent and inhibitor of carcinogenesis (melanoma). The present sequence is Escherichia coli chorismate pyruvate lyase (CPL) DNA. This sequence is found in the E. coli expression vector construct pET244(+).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro 165
                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                          65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     85
                                                                                                                                                                                                                                                                                                                             46 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAGCAGGGAAAAACGGTBAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    66 IleProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                            MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           301 AGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       361 ACATCATCACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGCGGG
                                                                                                                          0 U; 0 Other;
                                                                                                                                                                       4 9 8
0 0
0 0
0 0
                                                                                                                                                                      Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                          C; 141 G; 121 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ubic gene encoding chorismate pyruvate lyase.
                                                                                                                                                                                                                                                                               US-10-718-311-16 (1-170) x ADV91618 (1-498)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ВР
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCGTCACCGTTGTAC 495
                                                                                                                          BP; 114 A; 122
                                                                                                                                                                   8.4e-89
854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAD06956 standard; DNA; 854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AlaSerProLeuTyr
                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
                                                                                                                          Sequence 498
                                                                                                                                                       Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        06-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                           56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                               φ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAD06956;
                                                                                                                                                                                                                                Query Match:
DB:
                                                                                                                                                                           ..
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            888888888
                                                                                                                                                                                                                                                                                                                                         요
                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                           ठ
                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
```

```
The present invention relates to a method of producing p-hydroxybenzoic acid (pHB) which comprises transforming microorganisms with plasmids acid (pHB) which comprises transforming microorganisms with plasmids carying selected genes of the common aromatic pathway and by conversion of carbon sources. The selected genes of the common aromatic pathway of the invention includes ubiC gene encoding chorismate pyruvate lyses, arog tructural gene encoding 3-deoxy-D-arabino-heptulosonate-7-phosphate (DHAP) isoenzyme synthase (phb), tktA gene encoding transketolase, ppsA gene encoding phosphoenolpyruvate (pEPB) synthase, arog gene encoding chorismate synthase, arol gene encoding shikimate kinase II, aroA gene encoding 5-enolpyruvylahikimate-3-phosphate (BESP) synthase and aroB gene encoding 3-dehydroquinate (DHQ) synthase. The method is used for converting chorismate to a selected aromatic compound. The method is aromatic compounds, particularly p-hydroxybenzoic acid. The present sequence is ubiC gene which encodes chorismate pyruvate lyase that
                                                                                                                                                                                                                                                                                                                          Producing aromatic compounds, especially commercially acceptable levels of p-hydroxybenzoic acid, comprises developing genetically engineered bacteria that carry selected genes of the common aromatic pathway.
                                                                                                                                                                                                                                                 Amaratunga M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 854 BP; 202 A; 200 C; 222 G; 230 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                 Johnson BF,
                                                                                                                                                                                                                                               Bulmer DK,
                                                                                                                                                                                                                                                                                                                                                                                                              5; Col 31-32; 25pp; English,
                                                                                                                                                             97US-0044094P.
                                                                                                                      98US-00064693
                                                                                                                                                                                                                                             Ward TE, Watkins CS,
                                                                                                                                                                                                      (BECH-) BECHTEL BWXT
                                                                                                                                                                                                                                                                                      WPI; 2001-280857/29
Escherichia coli.
                                                                                                                                                               22-APR-1997;
                                      US6210937-B1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Alignment Scores:
                                                                               03-APR-2001
                                                                                                                                                                                                                                                                                                                                                                                                            Claim
```

 Pred. No.:
 1.78e-88
 Length:
 854

 Score:
 854.00
 Matches:
 165

 Percent Similarity:
 100.0\$
 Conservative:
 0

 Query Match:
 96.3\$
 Indels:
 0

 DB:
 4
 Gaps:
 0

US-10-718-311-16 (1-170) x AAD06956 (1-854)

8 8 8 8 8 8 8 8 8 8 8

125	106 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 125	106
620	TTATGTGCCGATGGTGAACCGTGGCTTGCCGTCGTACCGTCGTTCCTGTGTCAACGTTA	561
105	86 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105	8
260	1 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG	501
82	66 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu 85	99
500		441
65	6 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu	4 (
440	CTGGATCCGCAACTGCTCGATGCTGCTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 440	381
45	26 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu 45	5
380		321
25	6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla	•

```
g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          요
                                                                                                                                                                  ò
                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                                                                                                                    유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The present invention relates to a method of producing p-hydroxybenzoic acid (pHB) which comprises transforming microorganisms with plasmids carrying selected genes of the common aromatic pathway and by conversion of carbon sources. The selected genes of the common aromatic pathway of the invention includes ubic gene encoding chorismate pyruvate lyase, arog structural gene encoding 3-deoxy-D-arabino-heptulosonate-7-phosphate (DHAP) isoenzyme synthase (phb), tkth gene encoding transketolase, ppsA gene encoding phosphoenolpyruvate (PEP) synthase, arog gene encoding chorismate synthase arol gene encoding shikimate kinase II, aroA gene encoding converting 5-enolypruvoylBhikimate-3-phosphate (BESP) synthase and aroB gene encoding 3-dehydroquinate (DHQ) synthase. The method is used for converting chorismate to a selected aromatic compound. The method is aromatic compounds, particularly used for the production of commercially acceptable levels of aromatic compounds, particularly p-hydroxybenzoic acid. The present sequence is pME2 plasmid which comprises ubiC, arog, tktA and ppsA genes involved in the aromatic pathway
                                                                                                                                    800
                                                                                                                                                                                                                                                                                                                                                                                                                         chorismate pyruvate lyase; ppsA; phosphoenolpyruvate synthase; PEP synthase; tktA; transketolase; arCC; chorismate synthase; arCA; 5-enolpyruvoylshikimate-3-phosphate synthase; BPSP synthase; arCI; shikimate kinase II; arCB; 3-debydroquinate synthase; DHQ synthase; arCG; 3-deoxy-D-arabino-heptulosonate-7-phosphate synthase; DHAP synthase;
                                                                                                                                                                                                                                                                                                                                                                         tktA and ppsA genes of the aromatic pathway.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Producing aromatic compounds, especially commercially acceptable levels of p-hydroxybenzoic acid, comprises developing genetically engineered bacteria that carry selected genes of the common aromatic pathway.
621 AGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                    ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                    CGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                         p-hydroxybenzoic acid; pHB; aromatic pathway; carbon source; ubiC;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 6641 BP; 1567 A; 1698 C; 1853 G; 1523 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Amaratunga M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Johnson BF,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Bulmer DK,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Claim 4; Col 31-40; 25pp; English.
                                                                                                                                                                                                                                                                        H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (BECH-) BECHTEL BWXT IDAHO LLC
                                                                                                                                                                                                                                                                      AAD06957 standard; DNA; 6641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                98US-00064693.
                                                                                                                                                                    AlaSerProLeuTyr 170
                                                                                                                                                                                                   ccercaccerrerae 815
                                                                                                                                                                                                                                                                                                                                                                       pME2 comprising ubiC, aroG,
                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Watkins CS,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2001-280857/29.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              22-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US6210937-B1
                                                                                                                                                                                                                                                                                                                                        06-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                03-APR-2001
                                                                                                                                                                                                                                                                                                        AAD06957;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ward TE,
                                                               681
                                                                                                  146
                                                                                                                                  741
                                                                                                                                                                    166
                                                                                                                                                                                                   801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               pME2;
                                                                                                                                                                                                                                                   셤
                                                                                                                                                                  ઠે
                                                                                                                                                                                                셤
                             ò
                                                                                                 ઠે
```

```
800
                                                                                                                                                                                                                                                              440
                                                                                                                                                                                                                                                                                                                                                                                              560
                                                                                                                                                                                                                                                                                                                                                                                                                              105
                                                                                                                                                                                                                                                                                                                                                                                                                                                               620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly-145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               165
                                                                                                                                                                                                                               45
                                                                                                                                                                                                                                                                                               65
                                                                                                                                                                                                                                                                                                                                                                82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Hydroquinone glucoside; arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside; chorismate pyruvate lyase; CPL; 4-hydroxycinnamoyl-CoA hydratase/lyase; HCHL; gene expression; hydroquinone; antiseptic; transgenic plant; genetically engineered microorganism; antioxidant; antimicrobial agent; anti-inflammatory agent; carcinogenic inhibitor; melanoma; cytostatic; neoplasm; pHBA l-hydroxylase; pHBA; para-hydroxybenzoic acid; p-hydroxybenzoic acid;
                                                                                                                                                                                                                                                                                                                                                                            CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                               321 ATGTCACACCCCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATCCCTGCC
                                                                                                                                                                                                                                                    CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGATGCATGACAAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                              CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                IleProGluGluLeuProLeuLeuProLygGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                146 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                               26 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                             GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 561 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                621 AGCGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /*tag= a
/product= "Escherichia coli CPL protein"
/transl_except= (pos: 46. .48, aa:Cys)
             6641
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               parapsilosis pHB 1-H- E. coli CPL chimeric DNA.
                                            Conservative:
Mismatches:
Indels:
               Length:
Matches:
                                                                                                                                 (1-6641)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BP.
                                                                                                                               US-10-718-311-16 (1-170) x AAD06957
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADV91643 standard; DNA; 1971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                166 AlaSerProLeuTyr 170
            3.08e-87
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Candida parapsilosis.
Escherichia coli.
Chimeric.
                                                                   Best Local Similarity:
                                              Percent Similarity:
Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10-MAR-2005
                                                                                                                                                                                                                                                                                               46
                                                                                                                                                                                                                                                                                                                                441
                                                                                                                                                                                                                                                                                                                                                                99
                                                                                                                                                                                                                                                                                                                                                                                                                                  98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ADV91643;
                                                                           Query Match:
DB:
```

```
LeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeu 124
                                                                                                                                                                                    GlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeu 164
                                                                                                                                                                                                           421 GGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTCTTGCTAACAGAACTGTTTTTA 480
 241 TTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ubiquinone-10; biosynthetic enzyme; ubiC; ubiA; gene;
photosynthetic bacteria; recombinant production; plasmid pRSFAC;
glutamate_synthase; gene promoter; Rhodobacter capsulatus; transformant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The present sequence comprises the ubiquinone biosynthetic enzyme genes ubic and ubiA, which were cloned from the chromosomal DNA of E. coli (Kohara map phage DNA bark IP8 (634); Cell 50, 495-508 (1987)). A large amt. of ubiquinone-10 can be produced by culturing photosynthetic bacteria transformed with the novel plasmid pRSFAC, which contains the ubic and ubiA genes and the glutamate synthase gene promoter,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Genes coding for ubiquinone biosynthetic enzymes - useful for prodn. of ubiquinone-10 by transformed photosynthetic bacteria.
                                                                                                            PheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrp
                                                           301 TTAAGGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTG
                                                                                                                                 E. coli ubiquinone biosynthetic enzyme genes ubiC and ubiA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'rpt_type= inverted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    inverted
                                                                                                                                                                                                                                                                                                                                                                        ВP.
                                                                                                                                                                                                                                                           ProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                             481 cceccicaccerrarac 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Claim 1; Fig 2; 11pp; Japanese.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /*tag= a
/label= ubiC
890. .1762
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /*tag= b
/label= ubiA
1868. 1887
/*tag= c
                                                                                                                                                                                                                                                                                                                                                                      AAT29820 standard; DNA; 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                94JP-00273071.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      94JP-00273071.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /rpt_type= i:
1892. .1911
/*tag= d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 1996-262599/27.
P-PSDB; AAR97746, AAR97747.
                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (ALPH-) ALPHA SHOKUHIN KK.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 380. .877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MC9R/pRSFAC; 88.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JP08107789-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                13-OCT-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   13-OCT-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                              17-JAN-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              30-APR-1996.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                repeat_unit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   repeat unit
                                      105
                                                                                                            125
                                                                                                                                                                                    145
                                                                                                                                                                                                                                                           165
                                                                                                                                                                                                                                                                                                                                                                                                          AAT29820;
                                                                                                                                                                                                                                                                                                                                 RESULT 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Key
                                                                                                                                                                                                                                                                                                                                                      AAT29820
                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                        유
                                                                                                                                            셤
                                                                                                                                                                                    ò
                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                             셤
                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                hydroguinone glucoside (arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside) in genetically modified green plants and microorganisms. The method relies upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxybenzoic acid; pHBA) in a biosynthetic pathway to produce arbutin. Plants and microbes can be genetically engineered to produce high levels of pHBA either by functional expression of the bacterial protein chorismate pyruvate lyase (PCH) or by the expression of 4-hydroxycinnamoyl-CoA hydratase/lyase (HCHL) or a combination of both. Arbutin is useful as an antioxidant, antimicrobial agent, anti-inflammatory agent and inhibitor of carcinogenesis (melanoma). The present sequence is Candida parapsilosis pHBA 1-hydroxylase (PHB 1-H) and Escherichia coli chorismate pyruvate lyase (CPL) chimeric DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 GCCCTGGATCCGCAACTGCTCGACTGCTGTTGCTGGAGGATTCCATGACAAAACGTTTT 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThr 104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        84
                                                                                                                                                                                                                                                                                                                                                                                                    Producing hydroquinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase expression cassette.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   HisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIlePro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GlulleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGlulle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         25 AlaLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsn
             /*tag= b
/product= "Candida parapsilosis pHBA 1-H protein"
/transl_except= (pos: 540. .542, aa:Trp)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The present invention relates to methods and materials to produce
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 1971 BP; 550 A; 383 C; 484 G; 554 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1971
165
0
1
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-718-311-16 (1-170) x ADV91643 (1-1971)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Example 7; SEQ ID NO 54; 70pp; English.
                                                                                                                                                                                                                                                                                                            Viitanen PV, Flint D;
                                                                                                                                                              16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                  16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.26e-87
851.00
99.4%
95.9%
                                                                                                                                                                                                                                                                                                                                               WPI; 2005-057232/06.
P-PSDB; ADV91605, ADV91619.
522. .1961
                                                                                                                                                                                                                                  (MEYE/) MEYER K.
(VIIT/) VIITANEN P V.
(FLIN/) FLINT D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
                                                                                     US2004261147-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Alignment Scores:
                                                                                                                           23-DEC-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               85
                                                                                                                                                                                                                                                                                                            Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match:
DB:
```

ò 셤 ò 셤 8 임 δ g ò

```
(HYSE-) HYSEQ INC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        86
                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match:
DB:
 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            윤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                        439
                                                                                                                                                                                             499
                                                                                                                                                                                                                                   559
                                                                                                                                                                                                                                                                                            LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105
                                                                                                                                                                                                                                                                                                        TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA 679
                                                                                                                                                                                                                                                                                                                                   SerGlyProGluLeuAlaLeuGlnLyBLeuGlyLyBThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                                                                                                                                                                                                                                     739
                                                                                                                                                                                                                                                                                                                                                                         ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 145
                                                                                                                                                                                                                                                                                                                                                                                            799
                                                                                                                                                                                                                                                                                                                                                                                                              ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                 859
                                                                                                                                                                                                                                                                         ArccccGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG 619
                                                                                                                                     25
                                                                                                                                                                          45
                                                                                                                                                                                                                 65
                                                                                                                                                                                                                                                      85
                                                                                                                                              LeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                            CAGCAGGGAAAAACGGTAAGCGTGACGATGATGCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                              AGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                           CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                   MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                             crecarceccaacrecrecrecrecrecrecaescarrecareacaaacerrraaa
                                                                                                                                                                                                                GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                      | IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                    ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Human, chromosome mapping, gene mapping, gene therapy, forensic, food supplement, medical imaging, diagnostic, genetic disorder; ss.
 the Rhodobacter capsulatus transformant MC9R/pRSFAC
                  444 A; 462 C; 538 G; 556 T; 0 U; 0 Other;
                                              2000
164
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      encoding novel human diagnostic protein #26139
                                             Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                              Gaps:
                                                                                                                 (1-2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAS90335 standard; cDNA; 1207 BP
                                                                                                                 US-10-718-311-16 (1-170) x AAT29820
                                                                                                                                                                                                                                                                                                                                                                                                                                                    AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                              2000US-00540217
2000US-00649167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               30-MAR-2001; 2001WO-US008631
                                             1.29e-87
851.00
100.0%
99.4%
95.9%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                              Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                  Sequence 2000 BP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WO200175067-A2
specifically
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 31-MAR-2000;
23-AUG-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13-FEB-2002
                                     Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       860
                                                                                                                                     ø
                                                                                                                                                        380
                                                                                                                                                                          56
                                                                                                                                                                                             440
                                                                                                                                                                                                                                    200
                                                                                                                                                                                                                                                                         260
                                                                                                                                                                                                                                                                                                               620
                                                                                                                                                                                                                                                                                                                                                     680
                                                                                                                                                                                                                                                                                                                                                                        126
                                                                                                                                                                                                                                                                                                                                                                                            740
                                                                                                                                                                                                                                                                                                                                                                                                                146
                                                                                                                                                                                                                                                                                                                                                                                                                                  800
                                                                                                                                                                                                                                                                                                                                                                                                                                                     166
                                                                                                                                                                                                                 46
                                                                                                                                                                                                                                                       99
                                                                                                                                                                                                                                                                                            96
                                                                                                                                                                                                                                                                                                                                   106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AASO0333 AASO033 AASO0333 AASO
                                                                                                                                                                                          g
                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                요
                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                    ઠે
                                                                                                                                                      셤
                                                                                                                                                                          ò
                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                      ठ
                                                                                                                                                                                                                                                                                                                                 ઠ
                                                                                                                                                                                                                                                                                                                                                                  ઠે
```

```
The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polynuclectides are also used in diagnostics as expressed sequence tags for identifying expressed cativity of a sexpressed sequence tags for identifying expressed cativity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a useful for generating antibodies against it, detecting or quantitating a useful for generating antibodies against it, detecting or quantitating of stress expressing (II). (II) and (II) and (II) are useful for treating disorders involving aberrant protein expression or biological activity. The polypeptide and polynuclectide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations and to produce other types of data and products dependent on DNA and amino acid sequences. AASA197-AAS94564 represent novel human diagnostic coding sequences of the involving aberrant the printed specification, but was obtained in printed for the contract of the c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -LeuCysAlaAspGlyGluProTrpLeuAla-GlyArgThrValValProValSerThrL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    euSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  652 Argicacacccccccripacccaaciccriccricccriccrivitataacacciccricc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLygArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    712 criscarccecaacriscricaacriscriscriscriscassarcarritaaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGTATGTGCCGATGCGAACCGCGGCTTGCCGGGTCGTACCGTCGTTCCTGTGTCACGT
                                                                                                                                                                                          New isolated polynucleotide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess biodiversity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 1207 BP; 316 A; 265 C; 288 G; 338 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                      Claim 1; SEQ ID NO 26139; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-10-718-311-16 (1-170) x AAS90335 (1-1207)
Tang YT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.626-83
811.00
98.2%
97.6%
Ormanac RT, Liu C,
                                                                            WPI; 2001-639362/73
P-PSDB; ABG26148.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
```

```
        Qy
        125 heThrSerSerThrLeuThrArgAspPheileGluileGlyArgAspAlaGlyLeuTrpG

        Db
        1012 TCACATCATCACATTAACCCGGGACTTTATTGAGATAGCCGGCTCATGCCGGGCTCTGGG
        1071

        Qy
        145 lyArgArgSerArgLeuArgLeuSerGlyLyBProLeuLeuThrGluLeuPheLeuP
        165

        Db
        1072 GGCGACGTTCCCGCTGCGATTAAGCGGTAAACCGCTTGCTAACAGAACTGTTTTTAC
        1131

        Qy
        165 roAlaSerProLeuTy
        170

        Db
        1132 CGGCGTCACCGTTGTAC
        1148

        Search completed: May 30, 2006, 02:42:24
        30 time : 753.985 secs
```

THIS PAGE BLANK (USPTO)

```
GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
```

- nucleic search, using frame_plus_p2n model OM protein May 29, 2006, 20:59:50; Search time 725.015 Seconds (without alignments) 2380.132 Million cell updates/sec

Run on:

US-10-718-311-4

854 1 MSHPALTQLRALRYCKEIPA......RLSGKPLLLTELFLPASPLY 165 Title: Perfect score: Sequence:

BLOSUM62 Scoring table:

Xgapop 10.0 , Xgapext Ygapop 10.0 , Ygapext Fgapop 6.0 , Fgapext Delop 6.0 , Delext

Total number of hits satisfying chosen parameters:

5244920 segs, 3486124231 residues

Searched:

Minimum DB seq length: 0 Maximum DB seq length: 200000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

Command line parameters:
-MODEL=frame+ p2n.model -DEV-xlp
-0=/ADBS/ABSSWEB spool/US10718311/runat_26052006_164914_13428/app_query.fasta_1
-0=/ADBS/ABSSWEB spool/US10718311/runat_26052006_164914_13428/app_query.fasta_1
-DB=N Geneseq -OFWT=fastap-SUPFIX=rng -MINMATCH=0.1 -LOOPCL=0 -LOOPEXT=0
-UNITS=bits -START=1 -END=-1 -MATRIX=blosum62 -TRANS=human40.cdi -LIST=45
-UNITS=bits -START=1 -END=-1 -MATRIX=100 -THR MIN=0 -ALIGN=15 -MODE=LOCAL
-OFFWT=pto -NORM=ext -HEAPSIZE=500 -MINLEN=0 -MAXIAN-22000000000 -HOST=ADBS02p
-USER=US10718311_GCGN 1 1 2.295_Grunat_26052006 164914_13428 -NCPU=6 -ICPU=3
-NO WMAP -NEG_SCORES=0 -WAIT -DSPBLOCK=100 -LONGLOG -DEV_INEOUT=120
-WARN_TIMEOUT=30 -THREADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPEPE=7

-YGAPOP=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7

Database :

geneseqm1980s:* geneseqn1990s: geneseqn2001as genesegn2002bs genesegn2003as geneseqn2000s geneseqn2 Geneseq_8:*

geneseqn2003cs: geneseqn2004bs: geneseqn2004as: geneseqn2003bs:

geneseqn2006s:

result being printed, Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being prinand is derived by analysis of the total score distribution.

SUMMARIES

ALIGNMENTS

RESULT 1

AAQ92409 standard; DNA; 495 BP

AAQ92409;

11-JAN-1996 (first entry)

B.coli chorismate-pyruvate lyase coding sequence.

Chorismate-pyruvate lyase gene; ubiC gene; transgenic plant; tobacco mosaic virus resistance; antiviral activity; p-hydroxybenzoic acid; ss.

Escherichia coli

DB4423022-C1

24-MAY-1995.

94DB-04423022 30-JUN-1994;

94DE-04423022 30-JUN-1994;

(HEID/) HEIDE L.

Heide L, Siebert M, Severin K;

THIS PAGE BLANK (USPTO)

Title: Perfect score:

Sequence:

OM protein

Run on:

Scoring table:

Total number

Searched:

```
Adc25988 Tomato/Es
Adv31622 Tomato/Es
Adv31636 C. paraps
Aad06956 ubiC gene
Adv31636 C. paraps
Aat298020 E. coli u
Adv31643 C. paraps
Aat298035 DNA encod
Adf70957 Photorhab
Continuation (8 of
Adf02837 Bacterial
Abd08838 Pseudomon
Ad104203 DNA encod
Adf0287 Bacterial
Ad408869 E. coli K
Ad229956 DNA encod
Ad40869 E. coli K
Ad428956 DNA encod
Ad40869 E. coli K
Ad48899 E. coli K
Ad408895 E. coli K
Ad48899 E. coli K
Ad4889956 DNA encod
Ad40869 E. coli K
Ad48899 E. coli K
Ad48899 E. coli K
Ad48899 E. coli K
Ad40889 E. coli K
Ad48899 E. coli K
Ad48899 E. coli K
Ad49899 E. coli K
Ad49899 E. coli K
Ad41889 M. mening
Continuation (8 of
Ad5168 Neisseria
Ad49724 Mouse gen
Continuation (4 o
Continuation (5 of
Ad53232 Human Can
Acn44724 Mouse gen
Continuation (6 of
Ad53232 Human UNC
Abz33333 N. gonorr
                Adv91618 Escherich
Aba91838 Chloropla
Abk47712 DNA seque
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Aan 70438 Streptoco
Aak 78465 Human imm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Chorismate pyruvate lyase gene; ubiC gene; transgenic plant; tobacco mosaic virus resistance; antiviral activity;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                E.coli chorismate-pyruvate lyase coding sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ADQ97948
ACN44724
ACF67367 43
ACF65388 04
AEF63232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALIGNMENTS
                                                                                                                                                                                                                                                       ACF67367_40
ACF65388_07
                                                                                                                                                                                                                                                                                                                                         ACD78861
AAC78854
ACD78859
ADA22056
ADA22056
ADD369057
ADD36906
ADD36901
AAC37252
AAC37252
AAC37252
AAC37252
AAC37252
AAC37252
AAC37252
AAC37252
                                                                                                                                                                                                                                                                                                            ABD08838
                                                                                                                                                                                                                                                                                            ADF02837
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Heide L, Siebert M, Severin K;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAQ92409 standard; DNA; 495 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         94DE-04423022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         94DE-04423022
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                p-hydroxybenzoic acid; ss.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           14.2
10.4
10.5
10.5
10.5
10.0
10.5
10.0
10.1
10.0
10.1
10.0
10.1
10.0
10.1
10.0
10.1
10.0
10.1
10.0
10.1
10.0
10.1
10.0
10.0
10.1
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
10.0
1
                                                                                                                                                                                                                     645
519
110000
110000
                                                                                                                                                                                                                                                                                                                                          100
269223
                                                                                                                                                                                                                                                                                                                                                                                                                                            609
55839
                                                                                                                                                   100.0
                                                                                                                                                                                                                                                                                                         21.8
20.4
20.4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (HEID/) HEIDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      30-JUN-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         30-JUN-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DE4423022-C1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       24-MAY-1995.
                                                                                                                                                                                                                                                                                                                                                                                          165
157.5
146.5
130.5
130.5
121
97.5
90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  86.5
86.5
85.5
85.5
85.5
AAQ92409;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAQ92409
   Aag92409 E.coli ch
Aba91837 Escherich
Abk47709 DNA seque
                                                                                                          May 29, 2006, 20:59:50 ; Search time 725.015 Seconds (without alignments) 2380.132 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                   MSHPALTQLRALRYCKEIPA........RLSGKPLLLTELFLPASPLY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Description
                                                                                                                                                                                                                                                                                                                                                                                            10489840
                GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
                                                                                - nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                                                                                                                                                                         of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                          5244920 segs, 3486124231 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AAQ92409
ABA91837
ABK47709
                                                                                                                                                                                                                                                 BLOSUM62
Xgapop 10.0 , Xgapext
Ygapop 10.0 , Ygapext
Fgapop 6.0 , Fgapext
Delop 6.0 , Delext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                geneseqn2003cs:*
geneseqn2003ds:*
geneseqn2004as:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  geneseqn2004bs:*
geneseqn2005s:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           genesegn2001as:*genesegn2001bs:*genesegn2002as:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             geneseqn2002bs:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              geneseqn2003as:*geneseqn2003bs:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    geneseqn2006s:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     geneseqn1980s:*
geneseqn1990s:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              geneseqn2000s:*
                                                                                                                                                                                                                                                                                                                                                                                                                           Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query
Match Length DB
                                                                                                                                                                              US-10-718-311-4
854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Geneseq_8:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        495
495
495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100.0
100.0
100.0
```

Database :

Score

oy/ Result

```
Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match:
                                                                                       Key
                                                                                                                                                                                                                                                                                                                                            οĘ
 LeuCysAlaAspGlyGluFroTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                        CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                           CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ThrSerSerThrLeuThrArgAspPhelleGluileGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTTACCG 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ArgargSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                           LeuAspProGlnLeuLeuAspTrpLeuLeuCluAspSerMetThrLysArgPheGlu 40
                                                                                                                                                                                                                                                                                                                                                                                                                     GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 80
                                                                                                         Transgenic plants containing a bacterial gene which encodes an enzyme able to catalyse prodn. of an antiviral, bactericidal, fungicidal or insecticidal factor are new. A preferred gene is ubic from E.coli (AAQ92409) which codes for chorismate-pyruvate lyase (AAX74742). The lyase catalyses conversion of chorismate to p-hydroxybenzoic acid and transgenic tobacco plants which express the active enzyme are resistant
                                         Transgenic plants with increased content of resistance factor - contg. bacterial DNA coding for enzyme catalysing prodn. of resistance factor, e.g. antiviral p-hydroxy-benzoic acid.
                                                                                                                                                                                                                                                                                                                                            ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                               MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Transfecceanderdaaccendecrisecedercenacencentercancerna
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                Sequence 495 BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                495
165
0
0
0
                                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                             Indels:
                                                                                                                                                                                                                                                                                     Gaps:
                                                                                                                                                                                                                                                                                                            US-10-718-311-4 (1-165) x AAQ92409 (1-495)
                                                                                     Claim 3; Page 5; 7pp; German.
                                                                                                                                                                                                                               6.52e-89
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCGTCACCGTTGTAC
                                                                                                                                                                           tobacco mosaic virus
          WPI; 1995-186908/25.
P-PSDB; AAR74742.
                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                     ٦
                                                                                                                                                                                                                                                                                                                                                                            21
                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                421
                                                                                                                                                                                                                                                                                                                                                                                                                     41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ABA91837
ID ABAX
XX ABAX
XC ABAX
XX IS-1
ద
                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
```

```
The present sequence is that of the coding region of the Escherichia colistrain W3110 ubic gene in expression construct pET24a. The gene encodes chorismate pyravate lyses (CPL, see AAMS0968). It was obtained by FCR amplification of strain W310 genomic DNA using primers (see ABA91839-40) based on the published E coli ubic gene. The CPL open reading frame is used in an expression cassette designed for the high-level production of cp-hydroxybenzoic acid (pHBA) in green plants. The expression cassette comprises the CPL coding sequence operably linked to a promoter capable of driving protein expression in higher plants. The cassette also has a sequence encoding a chloroplast transit peptide, its natural cleavage stee, and a small portion of a transit peptide donor protein fused to the N-terminus of CPL. The chloroplast tarnsit peptide, its natural cleavage crite, and a small portion of a transit peptide, and cleavage of the chloroplast and aids in its uptake into the organalle. The chloroplast and aids in its uptake into the organalle. The chloroplast and aids in its uptake into the organalle. The chloroplast and assetted and cleavage of the chloroplast encoded by the cassette at this site release a novel collary each a small portion of transit peptide donor (see AAMS0961). A plant comprising the CPL expression cassette is claimed, and may be component, pageseed, sunflower, cotton, corn, tobacco, alfalfa, wheat, and expression and compared and and may be component of liquid crystal polymers which have application in the component of liquid crystal polymers which have application in the component of liquid crystal polymers which have application in the component of liquid crystal polymers which have application in the component of liquid crystal polymers which have application in the component of liquid crystal polymers which have application in the component of liquid crystal polymer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Producing para-hydroxy benzoic acid in green plant, comprises expression of unique expression cassette containing gene encoding chorismate pyruvate lyase operably linked to specific chloroplast targeting
                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
1. .495
/*tag= a
/*partial
/product= "Chorismate_pyruvate_lyase"
/note= "the CDS does not include a stop codon"
                                                                                                 enzyme; p-hydroxybenzoic acid;
Escherichia coli chorismate pyruvate lyase gene coding region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Viitanen PV;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           M
                                                                                                 Chorismate pyruvate lyase; CPL; transgenic plant; ubiC; gene; ds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Claim 4; Page 55; 60pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (DUPO ) DU PONT DE NEMOURS & CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  22-MAY-2001; 2001WO-US016661.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    02-JUN-2000; 2000US-0209854P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Meyer K, Van Dyk DE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WPI; 2002-226795/28.
P-PSDB; AAM50958.
                                                                                                                                                                                                                                                          Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WO200194607-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          13-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sequence.
```

Length: Matches: Conservative: Mismatches: Indels: Gaps:

6.52e-89 854.00 100.0% 100.0%

ABA91837 standard; DNA; 495

ò

ò

ò

(first entry)

15-MAY-2002

ABA91837;

US-10-718-311-4 (1-165) x ABA91837 (1-495)

ന

the

```
The present invention relates to the isolation of Arabidopsis thaliana gene (SNG1, sinapoylglucose accumulator 1) encoding sinapoylglucose.malate sinapoyltranaferase (SMT). SWT catalyses the substitution of a glucose moiety on a glycosylated aromatic acid with a malate moiety to form a malate conjugated aromatic acid. The enzyme is useful for producing malate conjugated aromatic acids, carboxylic acid conjugated aromatic acids or aromatic esters. The malate conjugated aromatic acids are useful in the synthesis of various polymers. The present sequence representing the ORF (open reading frame) for chorismate pyruvate lyase (CPL) in pBT24a Escherichia coli expression construct is
                                  Producing aromatic acid conjugates, involves contacting glycosylated aromatic acid with malate, alpha-hydrocarboxylic acid or alcohol in t presence of sinapoylglucose:malate sinapoyltransferase.
                                                                                                                                                                                                                                     BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                               described in the examples of the present invention
                                                                             Example; Page 68; 72pp; English.
   WPI; 2002-303779/34.
             P-PSDB; AAU77941
                                                                                                                                                                                                                                     Sequence 495
                                                                                                                                                                                                                                                           Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         241
                                                                                                                                                                                                                                                                                                                                                                                                                                                            41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                 Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ADC25984
ID ADC2
XX
   ò
                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                             180
                                                                                                                                                         240
                                                                                                                                                                               100
                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                              360
                                                                                                                                                                                                                                                                     140
                                                                                                                                                                                                                                                                                          420
                                                                                                                                                                                                                                                                                                               ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                 120
                                                                                                                                                                                                   300
                                              40
                                                                                       9
                                                                                                                                   80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SNG1; sinapoylglucose accumulator 1; SNT; aromatic ester; sinapoylglucose.malate sinapoyltransferase; glycosylated aromatic acid; malate conjugated aromatic acid; polymer synthesis; ubiC; CPL; gene; carboxylic acid conjugated aromatic acid; chorismate pyruvate lyase; pET24a; ds.
                LeukapproGinLeuLeukapTrpLeuLeucliukapSerMetThrLyskrgPheGlu
                                                           CTGGATCCGCAACTGCTCGACTGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                     LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                      MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                  11eProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                       Arccccaaadaacreccecrecreccaaadagrercerracregracegaaarrire
                                                                                                                                                                                                  Trafficceardercaaccidecrieccesrcarccirccicricrerera
                                                                                                                                                                                                                                                                   ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              construct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            for CPL in pET24a E. coli expression
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              codon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /*tag= a
partial
/product= "CPL"
/note= "This sequence lacks a stop
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Viitanen PV;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (DUPO ) DU PONT DE NEMOURS & CO
                                                                                                                                                                                                                                                                                                                                                                                                                          BP
                                                                                                                                                                                                                                                                                                                                                         AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            05-JUL-2001; 2001WO-US021283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   07-JUL-2000; 2000US-0216615P
                                                                                                                                                                                                                                                                                                                                                                                                                         ABK47709 standard; DNA; 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                           GCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1. .495
/*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DNA sequence of ORF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO200204653-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     18-JUN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        17-JAN-2002
                                                                                                                                                                                                                                             301
                                                               61
                                                                                                            121
                                                                                                                                                       181
                                                                                                                                                                                                  241
                                           21
                                                                                       41
                                                                                                                                 61
                                                                                                                                                                            81
                                                                                                                                                                                                                       101
                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                                                                                        161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Flint D,
                                                                                                                                                                                                                                                                                                               141
                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                               ABK47709
                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                      셤
                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                ద
                                                                                     ò
                                                                                                                              ò
                                                                                                                                                                           ð
                                                                                                                                                                                           g
                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                            ద
                                           ठे
                                                                                                                                                                                                                    õ
                                                                                                                                                                                                                                                                  ઠે
```

```
120
                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                         240
                                                                                                                                                                                                                                                                                                                                                                                         100
                                                                                                                                                                                                                                                                                                                                                                                                                    300
                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          480
                                                                                                                                                                   9
                                                                                                                                                                                                  40
                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                            80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LeudspProGlnLeuLeudspTrpLeuLeuGludspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                121 CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                       CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                     MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                        ATGTCACACCCCCCCCCGCTTAACGCAACTGCGTGCCTGCTATTGTAAAGAGAACCCTGCC
                                                                                                                                                                                                                           61 CTGGATCCGCAACTGCTCGACTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                          IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                         181 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                      LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                               GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                   SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
495
0
0
0
0
Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                         (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BP.
                                                                                                         x ABK47709
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AlaSerProLeuTyr 165
6.52e-89
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADC25984 standard; DNA; 495
                                                                                                        US-10-718-311-4 (1-165)
                            Percent Similarity:
Best Local Similarity:
```

```
ADV91618;
                                      121
                                                                                                                                                       81
                                                                                                                                                                                                                                  101
                                                                                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                                                                                                    361
                                                                                                                                                                                                                                                                                                                                                                                          141
                                                                                                                                                                                                                                                                                                                                                                                                                               421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (MEYE/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (FLIN/)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADV91611;

11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
11.10
1
                                                                                                                                                                                                                                                                     요
                                                                                                                                                                                                                                                                                                                                          요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                          g
                                                                ò
                                                                                                           요
                                                                                                                                                                                    요
                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               The invention relates to a novel isolated nucleic acid that encodes a UDP -glucosyltransferase. The method of the invention may be used to transform microorganisms or green plant cells so that these produce a higher level of high-volume chemicals or materials, such as pHBA (phydroxybenzoic acid) ester glucoside which is an intermediate for pHBA, a methylparaben. Methylparaben is a preservative commonly used in the food and cosmetic industries. The encoded enzymes may be used for in vitro production of these compounds and for identifying similar enzymes by sequence comparison. The current sequence is that of the Escherichia colismate pyruvate lyase (CPL, UDiC) DNA of the invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  New nucleic acid encoding UDP-glucosyltransferase, useful for preparing cells that produce p-hydroxybenzoic acid glucose ester, also the new
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /product= "Escherichia coli chorismate pyruvate lyase protein"
                                                                                                               UDP-glucosyltransferase; pHBA; p-hydroxybenzoic acid ester glucoside;
liquid crystal polymer; LCP; methylparaben; preservative; food;
cosmetic industry; ds; gene; ubiC; CPL; chorismate pyruvate lyase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Seguence 495 BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4495
0
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                            coli chorismate pyruvate lyase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Example 9; SEQ ID NO 37; 161pp; English
                                                                                                                                                                                                                                                                                                                                                    'note= "No stop codon"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-718-311-4 (1-165) x ADC25984 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (DUPO ) DU PONT DE NEMOURS & CO E I.
                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Viitanen PV;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   06-FEB-2003; 2003WO-US005863.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          07-FEB-2002; 2002US-0355511P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6.52e-89
854.00
100.0%
100.0%
                                      (first entry)
                                                                                                                                                                                                                                                                           ď
                                                                                                                                                                                                                                                                                         partial
                                                                                                                                                                                                                                                     .495
                                                                                                                                                                                                                                                                   /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Van Dyk DE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 2003-767259/72.
P-PSDB; ADC25985.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity:
                                                                                                                                                                                            Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                          WO2003066836-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Percent Similarity:
                                      18-DEC-2003
                                                                            Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                               14-AUG-2003
  ADC25984;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            enzymes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pred. No.:
ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
```

```
180
                                                                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                                                                                                                                               360
                                                                                                                                                                                                                                                                                                                                                                                                                                        140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               160
                                                                                                                                                         240
                                                                                                                                                                                                               100
                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     480
                                                                                                      80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Hydroquinone glucoside; arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside; chorismate pyruvate lyase; CPL; 4-hydroxycinnamoyl-COA hydratase/lyase; HCHL; gene expression; hydroquinone; antiseptic; transgenic plant; genetically engineered microorganism; antioxidant; antimicrobial agent; anti-inflammatory agent; carcinoganic inhibitor; melanoma; cytostatic; neoplasm; pHBA; para-hydroxybenzoic acid; p-hydroxybenzoic acid; gene;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Producing hydroquinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase expression cassette.
                                       CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAATGAA
                                                                                                                                                                                                                                               241 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                            181 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                               LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                            SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                  301 AGCGGGCCGGAGCTGCCGTTACAAAATTGGGTAAAACGCCCGTTAGGACGCCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                     ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                         61 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1, 498
/*tag= a
/product= "Escherichia coli CPL protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Escherichia coli chorismate pyruvate lyase (CPL) DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Flint
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ADV91618 standard; DNA; 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        161 AlaSerProLeuTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Meyer K, Viitanen PV,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Р.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              WPI; 2005-057232/06.
P-PSDB; ADV91619.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEYER K.
VIITANEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FLINT D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US2004261147-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10-MAR-2005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     23-DEC-2004
```

(revised)
(first entry)

```
29-AUG-2003
15-MAY-2002
   hydroguinone glucoside (arbutin, 4-hydroxyphenyl-beta-D-glucopyranoside) in genetically modified green plants and microorganisms. The method relies upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxybenzoic acid, pHBA) in a biosynthetic pathway to produce arbutin. Plants and microbes can be genetically engineered to produce high levels of pHBA either by functional expression of the bacterial protein chorismate pyruvate lyase (CPL) or by the expression of 4-hydroxycinnamoyl-CoA hydratase/lyase (HCHL) or a combination of both. Arbutin is useful as an antioxidant, antimicrobial agent, anti-inflammatory agent and inhibitor of carcinogenesis (melanoma). The present sequence is Bscherichia coli chorismate pyruvate lyase (CPL) DNA.
                                                                                                                                                                                                                                                                                                                                                                                               61 CTGGATCCGCAACTGCTCGACTGGTGTTTGCTGGAGGATTCCATGACAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                      240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ThrSerSerThrLeuThrArgAspPhelleGluileGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG 480
                                                                                                                                                                                                                                                                                                                                         20
                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                   40
                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     80
                                                                                                                                                                                                                                                                                                                                                                              21 LeuAspProGlnieuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                           41 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 IleProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                            181 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                       MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BP; 114 A; 122 C; 141 G; 121 T; 0 U; 0 Other;
                                present invention relates to methods and materials
                                                                                                                                                                                                                                        498
000
000
                                                                                                                                                                                                                                      Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                             Gaps:
          4; SEQ ID NO 29; 70pp; English.
                                                                                                                                                                                                                                                                                                                 US-10-718-311-4 (1-165) x ADV91618 (1-498)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ВР
                                                                                                                                                                                                                                      6.57e-89
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ABA91838 standard; DNA; 684
                                                                                                                                                                                                                                                                       Similarity:
                                                                                                                                                                                                                                                           Percent Similarity:
Best Local Similari
                                                                                                                                                                                                        Sequence 498
                                                                                                                                                                                                                           Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              141
                                                                                                                                                                                   oET24a (+
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ABA91838
            Example
                                                                                                                                                                                                                                                                                   Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ABA91838
셤
                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                 ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
```

```
The present nucleotide sequence is that of an open reading frame encoding chloroplast-targeted chorismate pyruvate lyase (CPL) fusion protein TP-CC chloroplast-targeted chorismate pyruvate lyase (CPL) fusion protein TP-CC CPL (see ABM50959). PCR (see ABM5091841-42) was used to generate a DNA fragment corresponding to the transit peptide of tomato Rubisco small subunit and the first 4 amino acid residues of mature Rubisco. The DNA CC fragment was ligated into pET24a-CPL. Which carries the Escherichia coli CCPL open reading frame (see ABA91837). The TP-CPL construct is an example CC expression cassettes of the invention that are designed for the high-CC leavage of TP-CPL in the chloroplast releases a novel polypeptide (see AM50961) that has full enzyme activity, converting chorismate to pHBA. A claimed plant comprising a CPL expression cassette is selected from soybean, rapeseed, sunflower, cotton, corn, tobacco, alfalfa, wheat, C batley, oats, sorghum, rice, Arabidopsis, sugarbeet, sugarcane, canola, millet, bean, pea, rye, flax or a forage grass. PHBA is a monomeric C component of liquid crystal polymers which have application in the automotive, electrical and other industries. (Updated on 29-AUG-2003 to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Producing para-hydroxy benzoic acid in green plant, comprises expression of unique expression cassette containing gene encoding chorismate pyruvate lyase operably linked to specific chloroplast targeting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /*tag= b
/note= "tomato Rubisco chloroplast targeting sequence"
                                                        Chloroplast transit peptide; tomato; Rubisco; plant; ribulose-1,5-bisphosphate carboxylase; chorismate pyruvate lyase; CPL; enzyme; p-hydroxybenzoic acid; transgenic plant; gene; ds.
Chloroplast transit peptide-chorismate pyruvate lyase fusion gene
                                                                                                                                                                                                                                                                                                                                                                          /*tag= a
/product= "chloroplast-targeted CPL fusion"
1. .186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           coli chorismate pyruvate lyase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 684 BP; 160 A; 171 C; 179 G; 174 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         684
165
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                н
Н
                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
1. .495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ρ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 17; Page 57; 60pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (DUPO ) DU PONT DE NEMOURS & CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Meyer K, Van Dyk DE, Viitanen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 02-JUN-2000; 2000US-0209854P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22-MAY-2001; 2001WO-US016661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1.02e-88
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /*tag= c
/note= "E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .492
                                                                                                                                                                                   Lycopersicon esculentum.
Escherichia coli.
Chimeric.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         187.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 2002-226795/28.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            P-PSDB; AAMS0959
                                                                                                                                                                                                                                                                                                                                                                                                                                            transit_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WO200194607-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   13-DEC-2001.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            mat_peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         seguence
```

```
AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                            21
                        Flint D,
                                                                                                                                                                                                                                                                                                                                                                                                              41
                                                                                                                                                                                                                                                                                                                                                                                                                               307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           161
        (DUPO)
                                                                                                                                                                                                                                                               Pred. No.:
g
                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        유
                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                             546
                                                                                                                                                                                                                                              140
                                                                                                                                                                                                                                                                                160
                                                 246
                                                                                   306
                                                                                                                     366
                                                                                                                                                       426
                                                                                                                                                                         100
                                                                                                                                                                                          486
                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                               909
                                                                                                                                                                                                                                                                                                 999
                                                                   40
                                                                                                     9
                                                                                                                                        80
                                  20
                                                                                                                                                                                                                                                                                                                                                                                                                                       SNG1; sinapoylglucose accumulator 1; SMT; aromatic ester; plant; sinapoylglucose:malate sinapoyltransferase; glycosylated aromatic acid; malate conjugated aromatic acid; polymer synthesis; ubiC; TP-CPL; gene; carboxylic acid conjugated aromatic acid; chorismate pyruvate lyase; tomato Rubisco small subunit precursor; rbcS2; mutant; ds.
                                                                                                                                                                                                                                                                               ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                           CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAAACGTTTTGAA
                                                                                                              SerGlyProGluLeuAlaLeuGlnLyBLeuGlyLyBlhrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                     AGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                               ATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGTTTGTAAAGAGATCCCTGCC
                                                                  LeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerWetThrLysArgPheGlu
                                                                                                    GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                      IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                  ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                         LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                          Transfeccioniscreadecirescrisecescriserentescriserentescriserentes
                                                                                                                                                                                                                                             ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                      CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "TP-CPL fusion protein"
                                                                                                                                                                                                                                                                                                                                                                                                                      of ORF for TP-CPL fusion protein.
Gaps:
                US-10-718-311-4 (1-165) x ABA91838 (1-684)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                     멾
                                                                                                                                                                                                                                                                                                                 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   05-JUL-2001; 2001WO-US021283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   07-JUL-2000; 2000US-0216615P
                                                                                                                                                                                                                                                                                                                                  ścercaccerrerac 681
                                                                                                                                                                                                                                                                                                                                                                    ABK47712 standard; DNA; 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /*tag= a
/product= '
                                                                                                                                                                                                                                                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Escherichia coli.
Lycopersicon esculentum.
Synthetic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO200204653-A2
                                                                                                                                                                                                                                                                                                                                                                                                                       DNA sequence
                                                                                                                                                                                                                                                                                                                                                                                                      18-JUN-2002
                                                                                   247
                                                                                                                                                                                                                                                             547
                                н
                                                 187
                                                                   21
                                                                                                                      307
                                                                                                                                                       367
                                                                                                                                                                         83
                                                                                                                                                                                          427
                                                                                                                                                                                                           101
                                                                                                                                                                                                                             487
                                                                                                                                                                                                                                                                                                                                  667
                                                                                                                                                                                                                                                                                                                                                                                     ABK47712;
                                                                                                    41
                                                                                                                                       61
                                                                                                                                                                                                                                             121
                                                                                                                                                                                                                                                                               141
                                                                                                                                                                                                                                                                                                607
                                                                                                                                                                                                                                                                                                                  161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Chimeric
                                                                                                                                                                                                                                                                                                                                                   RESULT
ABK4771
                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                               셤
                                                                                                                   g
                                                                                                                                                   g
                                                                                                                                                                                      g
                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                               g
                                ð
                                                                  ò
                                                                                                  Š
                                                                                                                                      È
                                                                                                                                                                         ŝ
                                                                                                                                                                                                        ક
                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                         ઠે
```

```
246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                  Producing aromatic acid conjugates, involves contacting glycosylated aromatic acid with malate, alpha-hydrocarboxylic acid or alcohol in the presence of sinapoylglucose:malate sinapoyltransferase.
                                                                                                                                                                                                                                                                                                                                  gene (SNG1, singuoylgiucose accumulator 1) encoding singuoylgiucose malate sinapoyltransferase (SWT). SWT catalyses the sinapoyltransferase (SWT). SWT catalyses the substitution of a glucose molety on a glycosylated aromatic acid with amalate moiety to form a malate conjugated aromatic acid. The enzyme is useful for producing malate conjugated aromatic acids, carboxylic acid conjugated aromatic acids or aromatic esters. The malate conjugated aromatic acids are useful in the synthesis of various polymers. The present sequence representing the ORF (open reading frame) for TP-CPL (tomato Rubisco small subunit precursor for rbc32-Escherichia coli chorismate pyruvate lyses (CPL) fusion protein is described in the examples of the present invention
                                                                                                                                                                                                                                                                                                                  The present invention relates to the isolation of Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             187 Arercacaccecegerraacecaacrecerececrececrarreraaagagarecerece
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LeuAspProGlnLeuLeuAspTrpLeuLeuCluAspSerWetThrLygArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cagcaggaaaaacggraagcgrgacgargarccgcgaagggrrrgrcgagcagaargaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TATATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTCTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 684 BP; 160 A; 171 C; 179 G; 174 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               684
0 0 0
0 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-718-311-4 (1-165) x ABK47712 (1-684)
  M
                                                  Viltanen PV;
                                                                                                                                                                                                                                                                  English.
DU PONT DE NEMOURS & CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1.02e-88
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                  Example; Page 70; 72pp;
                                                                                                2002-303779/34.
                                                Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                    P-PSDB; AAU77942
```

ADC25988

Chimeric.

```
LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                                                                             Hydroquinone glucoside; arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside; chorismate pyrvate lyase; CPi; 4-hydroxycinnamoyl-CoA hydratase/lyase; HCHL; gene expression; hydroquinone; antiseptic; transgenic plant; genetically engineered microcrganism; antioxidant; antimicrobial agent; anti-inflammatory agent; carcinogenic inhibitor; melanoma; cytostatic; neoplasm; pBBA; para-hydroxybenzoic acid; p-hydroxybenzoic acid; rubisco small subunit precursor; transit peptide; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Tomato rubisco small subunit precursor TP-E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       367 ATCCCCGAAGAACTGCCGCTGCTGCTGCAAAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                   SerGlyProGluLeuAlaLeuGlnLysEeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ArgargSerArgLeuArgLeuSerGlyLyBProLeuLeuLeuThrGluLeuPheLeuPro
                                                                          21 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                 41 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                        61 IleProGluGluLeuProLeuFroLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                       487 AGCGGGCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                            ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                547 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                   Transfecceandendaaccendecrisecedenceracericererereacerra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Tomato rubisco small subunit precursor TP-E. coli CPL chimeric DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /product= "Tomato rubiso
coli CPL fusion protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADV91622 standard; DNA; 684 BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10-MAR-2005 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ಹ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Lycopersicon esculentum.
Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US2004261147-A1
                                                                                                                                                                                                                                                                                              81
                                                                                                                                                                                                                                                                                                                                 427
                                                                                                                                                                                                                                                                                                                                                                     101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ADV91622;
                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chimeric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADV9162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                        ò
                                                                                                     a
                                                                                                                                             ઠે
                                                                                                                                                                             d
                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                  요
                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                           엄
                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The invention relates to a novel isolated nucleic acid that encodes a Upp-
glucosyltransferase. The method of the invention may be used to
transform microorganisms or green plant cells so that these produce a
higher level of high-volume chemicals or materials, such as pHBA (p-
hydroxybenzoic acid) ester glucoside which is an intermediate for pHBA, a
monomer for liquid crystal polymers (LCPs) and starting material for
methylparaben. Methylparaben is a preservative commonly used in the food
and cosmetic industries. The encoded enzymes may be used for in vitro
production of these compounds and for identifying similar enzymes by
sequence comparison. The current sequence is that of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           New nucleic acid encoding UDP-glucosyltransferase, useful for preparing cells that produce p-hydroxybenzoic acid glucose ester, also the new
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sequence comparison. The current sequence is that of the tomato/Escherichia coli chimeric TP-CPL (chorismate pyruvate lyase) DNA
                                                                                                                                                                                                                  UDP-glucosyltransferase; pHBA; p-hydroxybenzoic acid ester glucoside; liquid crystal polymer; LCP; methylparaben; preservative; food; cosmetic industry; ds; gnes; tomato; TP-CPL; chimeric; chorismate pyruvate lyase; plant.
                                                                                                                                                                                                                                                                                                                                                                                                                                          "Tomato/Escherichia coli chimeric TP-CPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Seguence 684 BP; 160 A; 171 C; 179 G; 174 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       684
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                               Tomato/Escherichia coli chimeric TP-CPL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Example 9; SEQ ID NO 41; 161pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ξ.
                                                                                                                                                                                                                                                                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Viitanen PV;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ႘
                                                                        B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (DUPO ) DU PONT DE NEMOURS &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        06-FEB-2003; 2003WO-US005863
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            07-FEB-2002; 2002US-0355511P
                                                                        684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1.02e-88
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                     1. 684
/*tag= a
/product= "
                                                                                                                                             (first entry)
GCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                             protein"
                                                                        DNA;
                                                                                                                                                                                                                                                                                                                               Lycopersicon esculentum.
Bscherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Van Dyk DE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 2003-767259/72.
                                                                        ADC25988 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         P-PSDB; ADC25989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO2003066836-A2
                                                                                                                                             18-DEC-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14-AUG-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
```

Meyer K,

enzymes.

16-JUN-2003; 2003US-00462162

US-10-718-311-4 (1-165) x ADC25988 (1-684)

Query Match:

Pred. No.: Score:

546

140

160

999

486 120

366

9

40

œ

```
Col 31-32; 25pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bulmer DK,
                                                                                                                                                                                                  BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (BECH-) BECHTEL BWXT IDAHO LLC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             97US-0044094P.
                                                                   165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98US-00064693
                                                                                                           681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.39e-88
854.00
100.0%
100.0%
                                                                                                                                                                                                AAD06956 standard; DNA; 854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            catalyses the production of
                                                                                                                                                                                                                                                                                   (first entry)
                                                                161 AlaSerProLeuTyr
                                                                                         GCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Watkins CS,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 2001-280857/29.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             22-APR-1997;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US6210937-B1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          03-APR-2001.
                                                                                                                                                                                                                                                                                   06-AUG-2001
                                                                                                                                                                                                                                        AAD06956;
                        607
                                                                                                             667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Claim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ward
                                                                                                                                                        RESULT 10
                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                The present invention relates to methods and materials to produce hydroquinone glucoside (arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside) in genetically modified green plants and microorganisms. The method relies upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxybenzoic acid; pHBA) in a biosynthetic pathway to produce arbutin. Plants and microbes can be genetically engineered to produce arbutin. Plants and microbes can be genetically engineered to produce increased pHBA either by functional expression of the bacterial protein chorismate pyruvate lyase (CPL) or by the expression of 4-bydroxycinnamoy-CoA hydratases/lyase (HCHL) or a combination of both. Arbutin is useful as an antioxidant, antimicrobial agent, anti-inflammatory agent and inhibitor of carcinogenesis (melanoma). The present sequence is tomato rubisco small subunit precursor (rbc22) transit peptide (chloroplast transit peptide; TP)-Escherichia coli CPL chimeric DNA. This sequence is present in the E. coli expression vector
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ThrSerSerThrLeuThrArgAspPhelleGlulleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      credarcescaleres de contraceres de contracares en contracares de c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   80
                                                                                                                                                                                     Producing hydroquinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase expression cassette.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrIysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CAGCAGGGAAAAACGGTAAGCGTGACGATGGTTCGCGGAAGGGTTTGTCGAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GlnGlnGlyLygThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IleProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              rrargreccearegreatecreecracecreerecreerecreerecreerera
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 684 BP; 160 A; 171 C; 179 G; 174 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              684
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indel8:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps:
                                                                                                                                                                                                                                                                               Example 4; SEQ ID NO 33; 70pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-718-311-4 (1-165) x ADV91622 (1-684)
                                                                                         Flint D;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1.02e-88
854.00
100.0%
100.0%
                                                                                     Viitanen PV,
                                                                                                                               2005-057232/06.
    MEYER K.
VIITANEN P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                               Ö.
                                                                                                                                                      P-PSDB; ADV91623
(WEYE/) MEYER B
(VIIT/) VIITANE
(FLIN/) FLINT D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
Pred. No.:
                                                                                       Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                41
    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
```

ઠે

8

ò

ઠે

ठे

ò

ઠ

```
The present invention relates to a method of producing p-hydroxybenzoic acid (pHB) which comprises transforming microorganisms with plasmids acid (pHB) which comprises transforming microorganisms with plasmids carying selected genes of the common aromatic pathway and by conversion of carbon sources. The selected genes of the common aromatic pathway of the invention includes ubiC gene encoding chorismate pyruvate lyase, arog structural gene encoding 3-deoxy-D-arabino-heptulosonate-7-phosphate (DHAP) isoenzyme synthase (phP), ttA gene encoding transketolase, ppsA gene encoding phosphoenolpyruvate (PEP) synthase, arof gene encoding chorismate synthase, arof gene encoding s-enolpyruvoylshikimate-3-phosphate (EPSP) synthase and arob gene encoding 3-dehydroquinate (DHA) synthase. The method is used for converting chorismate to a selected aromatic compound. The method is garticularly used for the production of commercially acceptable levels of aromatic compounds, particularly phydroxybenzoic acid. The present sequence is ubiC gene which encodes chorismate pyruvate lyase that
p-hydroxybenzoic acid; pHB; aromatic pathway; carbon source; ubiC; chorismate pyruvate lyase; ppsA; phosphoenolpyruvate synthase; ppsB; ppsB; phosphoenolpyruvate synthase; aroA; psB synthase; tktA; transketolase; aroC; chorismate synthase; aroA; 5-enolpyruvoylshikimate-3-phosphate synthase; BFSP synthase; aroL; shikimate kinase II; aroB; 3-dehydroquinate synthase; DHQ synthase; aroG; 3-deoxy-D-arabino-heptulosonate-7-phosphate synthase; DHAP synthase; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Producing aromatic compounds, especially commercially acceptable levels of p-hydroxybenzoic acid, comprises developing genetically engineered bacteria that carry selected genes of the common aromatic pathway.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Amaratunga M;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 854 BP; 202 A; 200 C; 222 G; 230 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             854
0
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      chorismate from pHB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Johnson BF,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ubiC gene encoding chorismate pyruvate lyase.
```

σ

```
SerGlyProGluLeuAlaLeuGlnLysLeuGlyLygThrProLeuGlyArgTyrLeuPhe 120
                                         16-JUN-2003; 2003US-00462162
                                                          16-JUN-2003; 2003US-00462162
                                                                                                                    Meyer K, Viitanen PV,
                                                                             (WEYE/) MEYER K.
(VIIT/) VIITANEN P V.
(FLIN/) FLINT D.
   US2004261147-A1
                     23-DEC-2004.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             101
   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                            SD VS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   õ
                                        380
                                                                               440
                                                                                                                    500
                                                                                                                                                           560
                                                                                                                                                                              100
                                                                                                                                                                                                 620
                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                       680
                                                                                                                                                                                                                                                           140
                                                                                                                                                                                                                                                                               740
                                                                                                                                                                                                                                                                                                  160
                                                                                                                                                                                                                                                                                                                     800
                     20
                                                           40
                                                                                                 9
                                                                                                                                        80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Hydroquinone glucoside; arbutin, 4-hydroxyphenyl-beta-D-glucopyranoside; chorismate pyruvate lyase; CPL; 4-hydroxycinnamoyl-COA hydratase/lyase; HCHL; gene expression; hydroquinone; antiseptic; transgenic plant; genetically engineered microorganism; antioxidant; antimicrobial agent; anti-inflammatory agent; carcinogenic inhibitor; melanoma; cytostatic; neoplasm; pHBA 1-hydroxylase; pHBA 1-H; pHBA; para-hydroxybenzcic acid; p-hydroxybenzcic acid; gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                            C. parapsilosis pHB 1-H- E. coli CPL- A. thaliana UGT72B1 chimeric DNA.
                   MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                      321 Argicacacciccecritaacecaacrecerecerecerarreraaagagarecerece
                                                                            credarccecaacrecrescrescrescrescrescarecareacaaacerrreaa
                                                                                                             LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                        TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTCTCCTGTGTCAACGTTA
                                                                                                                                                                                                                   SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                  ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                             CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                          LeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                             ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /product= "Arabidopsis thaliana UGT72B1 protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product= "Candida parapsilosis pHBA 1-H
/transl except= (pos: 559. .561, aa:Trp)
2004. .3446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /*tag= a
/product= "Escherichia coli CPL protein"
US-10-718-311-4 (1-165) x AAD06956 (1-854)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                  ADV91636 standard; DNA; 3452 BP
                                                                                                                                                                                                                                                                                                                                        AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                          801 GCGTCACCGTTGTAC 815
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 541. 1980
/*tag= b
                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Arabidopsis thaliana.
Candida parapsilosis.
Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                         10-MAR-2005
                                                                                                                                                                                                                                      621
                                                                                                                                                                                                                                                                              681
                                                        21
                                                                             381
                                                                                                41
                                                                                                                    441
                                                                                                                                                         501
                                                                                                                                                                             81
                                                                                                                                                                                                                   101
                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                 141
                                                                                                                                                                                                                                                                                                                                       161
                                                                                                                                                                                                                                                                                                                                                                                                                    ADV91636;
                                                                                                                                                                                                                                                                                                                                                                             RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sas
                                                                                                                                                                                                                                                                                                                   셤
                                                                           쉽
                                                                                                                                                       g
                                                                                                                                                                                              셤
                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                         a
                                                         ò
                                                                                               ò
                                                                                                                셤
                                                                                                                                    ò
                                                                                                                                                                             ð
                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                      ò
```

```
The present invention relates to methods and materials to produce hydroquinone glucoside (arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside) in genetically modified green plants and microorganisms. The method relies upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxybenzoic acid; (phydroxybenzoic acid; pHBA) in a biosyntheetic pathway to produce arbutin. Plants and microbes can be genetically engineered to produce high levels of pHBA either by functional expression of the bacterial phyllievels of phyllievels of phyllievels (PML) or by the expression of 4-bydroxycinnamoyl-Coh hydratese/lyase (CPL) or by the expression of both. Arbutin is useful as an antioxidant, antiacrobial agent, anti-inflammatory agent and inhibitor of carcinogenesis (melanoma). The inflammatory agent and inhibitor of carcinogenesis (melanoma). The Escherichia coli chorismate pyruvate lyase (CPL) and Arabidopsis thaliana UDP-glucosyltransferase (UGT72B1) chimeric DNA.
                                                                                                                                                                                                                                                           Producing hydroquinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 3452 BP; 932 A; 730 C; 856 G; 934 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Example 7; SEQ ID NO 47; 70pp; English
                                                                                                                                                            P-PSDB; ADV91605, ADV91619, ADV91631
ö
Flint
                                                                                                                                                                                                                                                                                                                                                                                 expression cassette.
                                                                                                    WPI; 2005-057232/06
```

Alignment Sorred. No.:	Scores:	9.61e-88 854.00	Length: Matches:	3452 165	
ercent Similarity:	ilarity:	100.0%	Conservative:		
best botal similality: Duery Match:	5111111111.y: :	100.0%	Mismaccnes: Indels:	• •	
эв:		14	Gaps:	0	
JS-10-718-3	11-4 (1-165)	JS-10-718-311-4 (1-165) x ADV91636 (1-3452)	1452)		
≿	1 MetSerHis	ProAlaLeuThrGlnL	euArgAlaLeuArg1	MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla	20
q	4 ATGTCACAC	CCCGCGTTAACGCAAC	recerececrecer	ATGTCACACCCGGGGTTAACGCAACTGCGCGGCGCGCTATTGTAAAGAGATCCCTGCC	63
``	21 LeuAspPro	GlnLeuLeuAspTrpL	euLeuLeuGluAspS	LeuaspProGlnLeuLeuaspTrpLeuLeuGluaspSerMetThrLysArgPheGlu	40
q	64 CTGGATCCG	CAACTGCTCGACTGGC	TGTTGCTGGAGGATT		123
, ,	41 GlnGlnGly	LysThrValSerValT	hrMetileArgGluG	GlnGlnGlyLygThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu	09
)b 13	124 CAGCAGGA	AAAACGGTAAGCGTGA	CGATGATCCGCGAAG		183
¥:	61 IleProGlu	GluteuProLeuteuP	roLysGluSerArg	11eProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu	80
JE 716	184 ATCCCCGAA	GAACTGCCGCTGCTGC	CGAAAGAGTCTCGTT	ATCCCGAAGAACTGCCGCTGCTGCTGCTGGTTACTGGTTACGTGAATTTTG	243
£	81 LeuCysAla	AspGlyGluProTrpL	euAlaGlyArgThrV	LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu	100
)p 54	244 TTATGTGCC	GATGGTGAACCGTGGC	TTGCCGGTCGTACCG	TTATGTGCCGATGGTGACCGTGGCTTGCCGGTCGTACCGTCCTTCCT	303

```
The present invention relates to a method of producing p-hydroxybenzoic acid (pHB) which comprises transforming microorganisms with plasmids carrying selected genes of the common aromatic pathway and by conversion of carbon sources. The selected genes of the common aromatic pathway of the invention includes ubic gene encoding chorismate pyruvate lyase, arof structural gene encoding 3-deoxy-D-arabino-heptulosonate-7-phosphate (DHAP) isoenzyme synthase (phe), tktA gene encoding transketolase, ppsA gene encoding phosphoenolpyruvate (PEP) synthase, arof gene encoding sene encoding shikimate kinase II, aroA gene encoding 5-dehydroquinate (DHAP) synthase and aroB converting chorismate to a selected aromatic compound. The method is used for converting chorismate to a selected aromatic compound. The method is particularly used for the production of commercially acceptable levels of aromatic compounds, particularly p-hydroxybenzoic acid. The present sequence is pME2 plasmid which comprises ubic, arod, tktA and ppsA genes involved in the aromatic pathway
                                                                                                       160
                                                                                                                                                                                                                                                                                                                                                                                                                                                    chorismate pyruvate lyase; ppsA; phosphoenolpyruvate synthase;
PEP synthase; tktA; transketolase; arcC; chorismate synthase; arcA;
5-enolpyruvoylshikimate-3-phosphate synthase; BPSP synthase; arcL;
shikimate kinase II; arcB; 3-debydroquinate synthase; DHQ synthase; arcG;
3-deoxy-D-arabino-heptulosonate-7-phosphate synthase; DHAP synthase;
                                                                    423
                                                                                                                                           483
AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC 363
                                                                                                                                                                                                                                                                                                                                                                                                 PME2 comprising ubic, aroG, tktA and ppsA genes of the aromatic pathway.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Producing aromatic compounds, especially commercially acceptable levels of p-hydroxybenzoic acid, comprises developing genetically engineered bacteria that carry selected genes of the common aromatic pathway.
                                                    ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                      ArgArgSerArgLeuArgLeuSerG]yLysProLeuLeuThrG]uLeuPheLeuPro
                                                                                                                          p-hydroxybenzoic acid; pHB; aromatic pathway; carbon source; ubiC;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 6641 BP; 1567 A; 1698 C; 1853 G; 1523 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Amaratunga
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Johnson BF,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bulmer DK,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Claim 4; Col 31-40; 25pp; English.
                                                                                                                                                                                                                                                                                         BP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (BECH-) BECHTEL BWXT IDAHO LLC
                                                                                                                                                                                                                                                                                         AAD06957 standard; DNA; 6641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             98US-00064693.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 97US-0044094P.
                                                                                                                                                                               AlaSerProLeuTyr 165
                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Watkins CS,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 2001-280857/29.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           22-APR-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US6210937-B1
                                                                                                                                                                                                                                                                                                                                                               06-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         03-APR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ward TE,
                                                                                                                                                                                                                                                                                                                             AAD06957;
304
                                                                    364
                                                                                                       141
                                                                                                                                           424
                                                                                                                                                                               161
                                                                                                                                                                                                                 484
                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               pME2;
                                                                                                                                                                                                                                                     RESULT 12
                                                                                                                                                                                                                                                                  g
                                                                                                                                         셤
                                                                                                      ò
                                                                                                                                                                             ò
```

```
440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   800
                                                                                                                                                                                                                                                                                                               380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               160
                                                                                                                                                                                                                                                                                                                                                                   40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ubiquinone-10; biosynthetic enzyme; ubiC; ubiA; gene; bhotosynthetic bacteria; recombinant production; plasmid pRSFAC; glutemate synthase; gene promoter; Rhodobacter capsulatus; transformant; MCSR/PRSFAC; se.
                                                                                                                                                                                                                                                                                            321 ATGTCACACCCCCCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATCCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                              CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    41 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAAGAACCAAAACGGTGACGAGATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   561 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     621 AGCGGGCCGGAGCTGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                              MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla

    E. coli ubiquinone biosynthetic enzyme genes ubiC and ubiA.

                        6641
165
0
0
0
                        Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                           US-10-718-311-4 (1-165) x AAD06957 (1-6641)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /rpt_type= inverted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /*tag= a
/label= ubiC
890. .1762
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /*tag= b
/label= ubiA
1868. .1887
/*tag= c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AAT29820 standard; DNA; 2000
                           38e-87
                                                854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  17-JAN-1997 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  380. .877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      161 AlaSerProLeuTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCGTCACCGTTGTAC
                                                Score:
Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Escherichia coli
Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       repeat_unit
                                                                                                                                                                                                                                                              Н
                                                                                                                                                                                                                                                                                                                                                                                                                      381
                                                                                                                                                                                                                                                                                                                                                                   21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AAT29820;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AAT29820
IID AAT2
XX AAC
XXX XXX II7-J
XX II
                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
```

BP.

161 AlaSerProLeuTyr

(first entry)

```
parapsilosis pHB 1-H- E. coli CPL chimeric DNA
                               860 GCGTCACCGTTGTAC 874
                                                                                           ADV91643 standard; DNA; 1971
                                                                                                                                                 10-MAR-2005
                                                                                                                       ADV91643;
                                                                                                        499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       679
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               740 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG 799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  800 CGACGITCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG 859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        80
                                                                                                                                                                                                                                                                                            The present sequence comprises the ubiquinone biosynthetic enzyme genes ubiC and ubiA, which were cloned from the chromosomal DNA of E. coli (Kohara map phage DNA bank IF8 (634); Cell 50, 495-508 (1987)). A large amt. of ubiquinone-10 can be produced by culturing photosynthetic bacteria transformed with the novel plasmid pR&FAC, which contains the ubiC and ubiA genes and the glutamate synthase gene promoter, specifically the Rhodobacter capsulatus transformant MC9R/pRSFAC
                                                                                                                                                                                                                                οŧ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATCCATGACAAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    500 CAGCAGGGAAAAACGGTAAGCGTGACGATGATGCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IleProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Transfecceanderdaaccendecrieccedriceraccercericereneraceria
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           680 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ThrSerSerThrLeuThrArgAspPhelleGlulleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                             Genes coding for ubiquinone biosynthetic enzymes - useful for prodn. ubiquinone-10 by transformed photosynthetic bacteria.
                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 2000 BP; 444 A; 462 C; 538 G; 556 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  2000
1164
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-718-311-4 (1-165) x AAT29820 (1-2000)
                          /rpt_type= inverted
                                                                                                                                                                                                                                                                    Claim 1; Fig 2; 11pp; Japanese
                                                                                                                                 94JP-00273071,
                                                                                                        94JP-00273071
1892. .1911
                                                                                                                                                                                     WPI; 1996-262599/27.
P-PSDB; AAR97746, AAR97747.
                                                                                                                                                                                                                                                                                                                                                                                                                                               16-87
851.00
100.0%
99.4%
                                                                                                                                                           SHOKUHIN KK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
                                                                                                                                                         (ALPH-) ALPHA
                                                  JP08107789-A
                                                                                                      13-OCT-1994;
                                                                                                                                 13-OCT-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
                                                                            30-APR-1996
repeat_unit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          141
```

ò g ઠે 셤 ò g ò a Š a ð 셤 ò g ð

```
The present invention relates to methods and materials to produce hydroquinone glucoside (arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside) in genetically modified green plants and microorganisms. The method relies upon transgenic plants or genetically modified microorganisms that produce increased levels of the initial substrate para-hydroxybenzoic acid; pHBA) in a biosynthetic pathway to produce arbutin. Plants and microbes can be genetically engineered to produce high levels of pHBA either by functional expression of the bacterial protein chorismate pyruvate lyase (CPL) or by the expression of 4-hydroxycinnamoyl-CoA hydratase/lyase (HCHL) or a combination of both. Arbutin is useful as an antioxidant, antimicrobial agent, anti-inflammatory agent and inhibitor of carcinogenesis (melanoma). The present sequence is Candida parapsilosis pHBA 1-hydroxylase (PHB 1-H) and
Hydroquinone glucoside; arbutin; 4-hydroxyphenyl-beta-D-glucopyranoside;
                        chorismate pyruvate lyase; CPL; 4 hydroxycinnamoyl-CCA hydratase/lyase; HCHL; gene expression; hydroquinone; antiseptic; transgenic plant; genetically engineered microorganism; antioxidant; antimicrobial agent; anti-inflammatory agent; carcinogenic inhibitor; melanoma; cytostatic; neoplasm; pHSA 1-hydroxylase; pHBA; para-hydroxybenzoic acid; gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Producing hydroquinone glucoside in a green plant comprises growing a green plant having nucleic acid fragments and chorismate pyruvate lyase expression cassette.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /product= "Candida parapsilosis pHBA 1-H
/transl_except= (pos: 540. .542, aa:Trp)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     'product= "Escherichia coli CPL protein"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /transl_except= (pos: 46. .48, aa:Cys)
522. .1<u>9</u>61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Example 7; SEQ ID NO 54; 70pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               16-JUN-2003; 2003US-00462162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P-PSDB; ADV91605, ADV91619.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Meyer K, Viitanen PV,
                                                                                                                                                                                                                                                                                                           Candida parapsilosis.
Escherichia coli.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (MEYE/) MEYER K. (VIIT/) VIITANEN P V.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2005-057232/06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (FLIN/) FLINT D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US2004261147-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         23-DEC-2004.
                                                                                                                                                                                                                                                                                                                                                                                            Chimeric.
```

```
832 Arcccccaacaacrcccccrccrccccaaacacrccrccrracrccrracgraaarrrrc 891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21 LeuaspProGinLeuLeuaspTrpLeuLeuCluaspSerMetThrLysargPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61 IleProGluGuLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -LeuCysAlaAspGlyGluProTrpLeuAla-GlyArgThrValValProValSerThrL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GlnGlnGlyLygThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       392 TGTATGTGCCGATGGCGAACCGCGGCTTGCCGGGTCGTACCGTCGTTCCTGTGTCAACGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              952
                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match:
DB:
 요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                   100
                                                                                                                                                                                                                                                                                                                                                                                                                      160
                                                                                                                                                                                                 123
                                                                                                                                                                                                                                       183
                                                                                                                                                                                                                                                                               243
                                                                                                                                                                                                                                                                                                                     303
                                                                                                                                                                                                                                                                                                                                                             363
                                                                                                                                                                                                                                                                                                                                                                                                  423
                                                                                                                                                                                                                                                                                                                                                                                                                                          483
                                                                                                                                                                             40
                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                           80
                                                                                                                                        20
                                                                                                                                                   63
                                                                                                                                                                             LeudapproGlnLeuLeudapTrpLeuLeuCludapSerMetThrLysdrgPheGlu
                                                                                                                                                                                                                                                                                                             MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                        CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAAGAAGAA
                                                                                                                                                                                                                                                           IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                       SerGlyProGlubeuAlaLeuGlnLyBLeuGlyLyBThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                              ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                           ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGGTGTGGGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                      ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                 CGACCTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                     GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                              Arccccaaagaacrgccgcrgccgaaagagrcrcgrracrggrracgrgaaarrrrg
                                                                                                                                                                                                                                                                                                                                                            AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human, chromosome mapping, gene mapping, gene therapy, forensic, food supplement, medical imaging, diagnostic, genetic disorder, ss.
Escherichia coli chorismate pyruvate lyase (CPL) chimeric DNA.
                 U; 0 Other;
                                              1971
164
0
1
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA encoding novel human diagnostic protein #26139
                                              Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                 550 A; 383 C; 484 G; 554 T; 0
                                                                                                                   (1-1971)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AAS90335 standard; cDNA; 1207 BP
                                                                                                                   US-10-718-311-4 (1-165) x ADV91643
                                                                                                                                                                                                                                                                                                                                                                                                                                                           AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2000US-00540217.
2000US-00649167.
                                             8.23e-87
843.00
99.4%
99.4%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           30-MAR-2001; 2001WO-US008631
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (first entry)
                                                                Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                 Sequence 1971 BP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WO200175067-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              31-MAR-2000;
23-AUG-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              13-FEB-2002
                                     Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        11-OCT-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               484
                                                                                                                                                                              21
                                                                                                                                                                                                64
                                                                                                                                                                                                                     41
                                                                                                                                                                                                                                       124
                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                               184
                                                                                                                                                                                                                                                                                                                    244
                                                                                                                                                                                                                                                                                                                                                            304
                                                                                                                                                                                                                                                                                                                                                                                                  364
                                                                                                                                                                                                                                                                                                                                                                                                                      141
                                                                                                                                                                                                                                                                                                                                                                                                                                                            161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAS90335;
                                                                                                                                                                                                                                                                                                   81
                                                                                                                                                                                                                                                                                                                                         101
                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                       ò
                                                                                                                                                                            ઠે
                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
```

20

771

9

40

100 951

```
The invention relates to isolated polynucleotide (I) and polypeptide (II) sequences. (I) is useful as hybridisation probes, polymerase chain reaction (PCR) primers, oligomers, and for chromosome and gene mapping, and in recombinant production of (II). The polynucleotides are also used in diagnostics as expressed sequence tags for identifying expressed control of (II) are to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a cultivity of (II) or to treat disease states involving (II). (II) is useful for generating antibodies against it, detecting or quantitating a cultivity of (II) and its binding partners are useful in medical imaging cultiply in aberrant protein expression or biological activity. The cusponable for generating successivations in colypeptide and polynucleotide sequences have applications in diagnostics, forensics, gene mapping, identification of mutations cresponable for genetic disorders or other trails to assess biodiversity and to produce other types of data and products dependent on DNA and amino acid sequences of the invention. Note: The sequence data for this coling sequences of the invention. Note: The sequence data for this coling sequence the printed specification, but was obtained in coling coling appear in the printed specification, but was obtained in coling sequences.
                                                                                                                                                                                                                                                                New isolated polynuclectide and encoded polypeptides, useful in diagnostics, forensics, gene mapping, identification of mutations responsible for genetic disorders or other traits and to assess biodiversity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 1207 BP; 316 A; 265 C; 288 G; 338 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 1; SEQ ID NO 26139; 103pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ftp.wipo.int/pub/published_pct_sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (1-1207)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-4 (1-165) x AAS90335
                                                                     Tang YT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2.06e-83
811.00
98.2%
97.6%
                                                                         Drmanac RT, Liu C,
                                                                                                                                              WPI; 2001-639362/73.
P-PSDB; ABG26148.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Percent Similarity:
Best Local Similarity:
(HYSE-) HYSEQ INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
Pred. No.:
```

```
        Qy
        120 heThrSerSerThrLeuThrArghapPheileGluileGlyArghapAlaGlyLeuTrpG 140

        Db
        1012 TcAcATCATCGACATTAACCCGGGACTTATTGAGATAGGCCGTCATGCCGGGCTGTGGG 1071

        Qy
        140 lyArgArgSerArgLeuArgLeuSerGlyLySProLeuLeuLeuThrGluLeuPheLeuP 160

        Db
        1072 GGCGACGTTCCCGGCTTGAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTAC 1131

        Qy
        160 roAlaSerProLeuTr 165

        Db
        1132 CGGCGTCACCGTTGTAC 1148
```

Search completed: May 30, 2006, 02:42:29 Job time : 730.015 secs

THIS PAGE BLANK (USPTO)

Scoring table:

Total number

Searched:

Title: Perfect score:

Run on:

Seguence:

```
AX382254 Sequence
AR455412 Sequence
AX329368 Sequence
AX329368 Sequence
AX32936 Sequence
AX32925 Sequence
AX34276 Sequence
AR14778 Sequence
AR14778 Sequence
AR14778 Sequence
AR14778 Sequence
Continuation (43 o
Continuation (52 o
Continuation (52 o
Continuation (52 o
Continuation (52 o
Continuation (43 o
Continuation (44 o
Continuation (44 o
Continuation (45 o
Continuation (45 o
Continuation (44 o
Continuation (43 o
Continuation (44 o
Continuation (43 o
Continuation (43 o
Continuation (44 o
AL67282 Salmonell
AR08450 Sequence
AE013658 Yersinia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AE017128 Yersinia
Continuation (7 of
BX571873 Photorhab
Continuation (13 o
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PAT 07-MAR-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AJ414142 Yersinia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Escherichia coli
Escherichia coli
Bacteria, Proteobacteria, Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
1 (bases 1 to 495)
Heide, L., Severin, K. and Siebert, M.
TRANSGENIC PLANTS WITH AN INCREASED SECONDARY SUBSTANCE CONTENT
Patent: WO 9600788-A 1 11-JAN-1996;
HEIDE LUTZ (DE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           coli"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Other publication AU 2879295 960125
Other publication DE 4423022 950524.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /mol_type="unassigned DNA"
/strain="MC4100"
/db_xref="taxon:562"
                                                                                                                                                                                                                                                                                                         U00096_42
AP009048_42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CP000026_41
CP000026_42
AE014613_42
AE017220_43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BX950851_06
BX571873_
BX897699_12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 495 bp
Sequence 1 from Patent WO9600788.
A47932.
A47932.1 GI:2301795
                                                                                                                                                                                                                                                                                 AE005174_51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BX936398_04
                                                                                                                                                ECOUBICA
ECOUBIPLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism="Escherichia
AX329364
AX382254
AR428736
AR455412
AX329368
AX382258
AX144788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AE008898
                                                                                                                                                                                                                                                                  ECOUW89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AR384505
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     25155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

100.0

10
495
684
684
684
684
10498
2000
2000
2000
2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   110000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    110000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     234050
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      290803
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1. .495
                                                                               100.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     417
408.5
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A47932
LOCUS
                                                                                                                                                                -MODELE frame+ p21. model - DEV=x1h
-Q=/abss/ABSSWEB spool/US10718311/runat_26052006_164916_13439/app_query.fasta_1
-Q=/abss/ABSSWEB spool/US10718311/runat_26052006_164916_13439/app_query.fasta_1
-Q=/abss/ABSSWEB spool/US10718311 - DEVERTED - DEVERTED - 1 - LOOPEXTA=0
-UNITS=bits - START=1 - END=-1 - MATRIX=blosude2 - TRANS=human40.cdi - LIST=45
-DOCALIGN=200 - THR SCORE=pct - THR MAX=100 - THR MIN=0 - ALICN=15 - MODE=LOCAL
- OUTFWT=pto - NORN=ext - HEAPSIZE=50 - MINLEN=0 - MAXLEN=200000000 - HOST=abss03h
- USER=US10718311 - GGN 1 - 1 5767 - GRUNA - 13439 - NCPU=6 - ICPU=3
- NO WMAP - NEG SCORES=0 - WAIT - DSPBLOCK=100 - LONGLOG - DEV TIMEOUT=120
- WARN TIMEOUT=30 - THREADS=1 - XGAPOP=10 - XGAPEXT=0.5 - FGAPOP=6 - FGAPEXT=7
                                                                                                          May 30, 2006, 01:30:02 ; Search time 5000.73 Seconds (without alignments) 3164.934 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A47932 Sequence 1
AR428733 Sequence
AR455409 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                              1 MSHPALTQLRALRYCKEIPA.......RLSGKPLLLTELFLPASPLY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Description
               GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
                                                                             OM protein - nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                                                                                                                                                                  of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                 6366136 seqs, 31973710525 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A47932
AR428733
AR455409
                                                                                                                                                                                                                                      BLOSUM62
Xgapop 10.0 , Xgapext
Ygapop 10.0 , Ygapext
Fgapop 6.0 , Fgapext
Delop 6.0 , Delext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Post-processing: Minimum Match 0% Maximum Match 100%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          П
                                                                                                                                                                                                                                                                                                                                                                                                                 Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                            US-10-718-311-4
854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GenEmbl:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Command line parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100.0
100.0
100.0
```

Database :

854 854 854

Score

Result No.

Query Match: 100.0% Indels: 0 DB: 2 Gaps: 0 US-10-718-311-4 (1-165) x AR428733 (1-495) Qy 1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla 20 Qy 1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgAlaLeuArgAluIleProAla 20 1 ATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGC	Qy 21 LeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGlu 40	Qy 41 GlnGlnGlyLygThrValSerValThrMetIleArgGluGlyPheValGluGlnGlnAsnGlu 60	Qy 61 IleProGluGluLeuDroLeuBroLysGluSerArgTyrTrpLeuArgGluIleLeu 80	0y 81 LeucysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100	Qy 101 SerGlyProGluLeualaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120	Qy 121 ThrSerSerThrLeuThrArgAspPheileGluileGlyargAspAlaGlyLeuTrpGly 140	Oy 141 ArgArgSerArgLeuArgLeuArgLeuSerGlyLysBroLeuLeuLeuThrGluLeuPheLeuPro 160	Qy 161 AlaSerProLeuTyr 165 Db 481 GCGTCACCGTTGTAC 495	AR455409	com patent US 3I:42689957	REFERENCE 1 (bases 1 to 495) AUTHORS Meyer, K., Vittanen, P.V. and Van Dyk, D.E. TITLE High level production of p-hydroxybenzoic acid in green plants JOURNAL Patent: US 683231-1A 3 27-JAN-2004; E. I. du Pont de Nemours and Company; Wilmington, DE FEATURES 1495 //organism="unknown" //nol_type="genomic DNA"	Alignment Scores: 1.54e-81 Length: 495 Pred. No.: 854.00 Matches: 165 Score: 854.00 Matches: 165 Percent Similarity: 100.0% Conservative: 0 Bast Local Similarity: 100.0% Thématches: 0 Conservative: 0 Conser	100.0% INGELS: 2 Gaps: 1-4 (1-165) x AR455409 (1-495) 1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgT
Pred. No.: 1.54e-81 Length: 495 Score: 854.00 Matches: 165 Score: 165 Best Local Similarity: 100.0% Conservative: 0 Query Match: 100.0% Mismatches: 0 DB: 2 Gaps: 0 US-10-718-311-4 (1-165) x A47932 (1-495)	Qy 1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla 20	Qy 21 LeuAspProGlnLeuLeuAspTrpLeuLeuCluAspSerMetThrLysArgPheGlu 40	Qy 41 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu 60	Qy 61 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu 80	Qy 81 LeuCysAlaAspGlyGluBroTrpLeuAlaGlyArgThrValValProValSerThrLeu 100	Qy 101 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120	Qy 121 ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 140	Qy 141 ArgargSerargLeuargLeuargLeuserGlyLysProLeuLeuThrGluLeuPheLeuPro 160	Qy 161 AlaSerProLeuTyr 165	2 3 AR428733 ION Sequence 12 ON AR428733	VERSION AR428733.1 G1:40188463 KEYWORDS SOURCE Unknown. ORGANISM Unknown. Unclassified. (Classes 1 to 495) AUTHORS Flint,D., Meyer, K. and Viitanen,P. TITLE Sinapoylglucose:malate sinapoyltransferase form malate conjugates from benozic acid glucosides JOURNAL Patent: US 6642036-A 12 04-NOV-2003, E. I. Du Pont de Nemours and Company; Wilmington;	WOX; FEATURES Location/Qualifiers source 1. 495 /organism="unknown" /mol_type="genomic DNA"	Alignment Scores: 1.54e-81 Length: 495 Pred. No.: 854.00 Matches: 165 Score: 100.0% Conservative: 0 Best Local Similarity: 100.0% Mismatches: 0

ო

```
PAT 18-MAR-2002
                                                                           140
                                                                                                                                                                                                                                               Flint, D., Meyer, K. and Viitanen, P.V.
Sinapolyglucose:malate sinapolyltransferase form malate conjugates
from benozic acid glucosides
from benozic acid glucosides
From VO 0204653-A 12 17-JAN-2002,
B.I. DUPONT DE NEMOURS AND COMPANY (US)
Location/Qualifiers
                                                                                                                       100
                                                                                                                                 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                 Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                               121 CAGCAGGAAAACGGTAAGCGTGACGATGATCCCCGGAAGGGTTTGTCGAGCAGAATGAA
   LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                     361 ACATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                   GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                      ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      495
1165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                         DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1. .495
/organism="Bscherichia coli"
/mol_type="unassigned DNA"
/db_xref="taxon:562"
                                                                                                                                                                                                                                                                                                                                                        AX382254 495 bp
Sequence 12 from Patent WO0204653.
AX382254
AX382254.1 GI:19577034
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-718-311-4 (1-165) x AX382254 (1-495)
                                                                                                                                                                                                                                                                                          AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                          GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1.54e-81
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                            Escherichia coli
Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
Pred. No.:
                                    41
                                                                                                                      81
               61
                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                           161
                                                                                                                                                                                                                                                                                                               481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                    RESULT 5
AX382254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score:
                                                                                                                                                                                                                                                                                                                                                        LOCUS
                                 8
                                                 g
                                                                           ઠે
                                                                                           셤
                                                                                                                     Š
                                                                                                                                      셤
                                                                                                                                                           ò
                                                                                                                                                                               셤
                                                                                                                                                                                                      8
                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                  PAT 08-JAN-2002
                                                                                                                                                            LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                 180
                                                                                                                                           240
                                                                                                                                                                                  300
                                                                                                                                                                                                     SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                           360
                                                                                                                                                                                                                                              ThrSerSerThrLeuThrArgAspPheileGluileGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                                                          160
                                                                                                                                                                                                                                                                                                               480
                                                                                                                                                                                                                                                                    361 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG 420
                                                                            9
                                                                                                                      80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21 LeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGlu 40
                                                                        41 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                       CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGGAGCAGAATGAA
                                                                                                                  301 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                         ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
421 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               green plants
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            coli"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1. .495
'Organism="unidentified"
/mol_type="unassigned DNA"
/db_xref="taxon:32644"
/note="Description of Unknown Organism:E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Meyer, K., van Dyk, D.E. and Viitanen, P.V.
High Level production of p-hydroxybenzoic acid in
Patent: WO 0194607-A 3 13-DEC-2001;
E.I. Dupont De Nemours (US)
                                                                                                                                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  495
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                 DNA
                                                                                                                                                                                                                                                                                                                                                                                                495 bp
Patent WO0194607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Int De Nemours (US)
                                                                                                                                                                                                                                                                                                                                                                                                                               AX329364.1 GI:18102364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         unclassified sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           x AX329364
                                                                                                                                                                                                                                                                                                                                                GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                  AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.54e-81
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                              AX329364
Sequence 3 from
AX329364
                                                                                                                                                                                                                                                                                                                                                                                                                                                   unidentified
unidentified
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-718-311-4 (1-165)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Alignment Scores:
                                 21
                                                   61
                                                                                                121
                                                                                                                                        181
                                                                                                                                                            81
                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                      101
                                                                                                                                                                                                                                                                                         141
                                                                                                                                                                                                                                                                                                                                  161
                                                                                                                                                                                                                                                                                                                                                                                                                   ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                               LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ..
No...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                      AX329364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORIGIN
                                                                                         8 B
                                                                                                                                                                                                                     셤
                                ò
                                               a
                                                                  ठे
                                                                                                                                 g
                                                                                                                                                      දු පු
                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                             õ
                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
```

426

&

8 8

요 õ g

8 8

g

ઠે 셤

ठे

```
PAT 20-FEB-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                       Unknown.
Unknown.
Unclassified.
1 (bases 1 to 684)
1 (bases 1 to 684)
Meyer, K., Viitanen, P.V. and Van Dyk, D.E.
High level production of p-hydroxybenzoic acid in green plants
Patent: US 6683231-A 7 27-JAN-2004;
E. I. du Pont de Nemours and Company; Wilmington, DE
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                  SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyAkgTyrLeuPhe
                                                                                               GlnGlnGlyLysThrValSerValThrWetIleArgGluGlyPheValGluGlnAsnGlu
 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                         ThrSerSerThrLeuThrArgAspPhe11eG1u11eG1yArgAspAlaG1yLeuTrpG1y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    684
0 0 0
0 0 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                           DNA
                                                                                                                                                                                                                                                                       684 bp
3 6683231.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-718-311-4 (1-165) x AR455412 (1-684)
                                                                                                                                                                                                                                                                         AR455412 6
Sequence 7 from patent US
AR455412 GI:42689960
                                                                                                                                                                                                           2.19e-81
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                            Unknown.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
  61
                    367
                                         81
                                                             427
                                                                                   101
                                                                                                      487
                                                                                                                          121
                                                                                                                                                                     141
                                                                                                                                                                                       607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      81
                                                                                                                                                                                                                                                                                            ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                  DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ..
No..
                                                                                                                                                                                                                                                                                                                                                          REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                    RESULT 7
AR455412
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                        JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORIGIN
                                                                                                                                                                                  ద
                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                6 8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
              원
                                                       셤
                                                                                  ò
                                                                                                 a
                                                                                                                    ⋧
                                                                                                                                           셤
                                                                                                                                                             8
                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                  PAT 18-DEC-2003
                                                                                                                                                                     140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValValProValSerThrLeu 100
                                                                                                        300
                                                                                                                           120
                                                                                                                                                                                       420
                                                                                                                                                                                                           ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu 40
                                         80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GlnGlnGlyLygThrValSerValThrMetlleArgGluGlyPheValGluGlnAsnGlu 60
                                                                                                                                                                                                                                                                                                                                                                                                                         malate conjugates
                                       CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                               TTATGTGCCGATGGTGAACCGTGGCTTGCTCGTACCGTCGTTCCTGTGTCACGTTA
                                                                                                                                                                  ThrSerSerThrLeuThrArgAspPhe11eG1u11eG1yArgAspAlaG1yLeuTrpG1y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                          SerGlyProGluLeuAlaLeuGlnLygLeuGlyLygThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                               ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                  linear
                                                                                                                                                                                                                                                                                                                                                                                                  1 (bases 1 to 684)
Plint, D., Meyer, K. and Viitanen, P.
Sinapoylglucose.malate sinapoyltransferase form m
from benozic acid glucosides
Patent: US 6642036-A 16 04-NOV-2003;
E. I. Du Pont de Nemours and Company; Wilmington;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   684
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                 84 bp
6642036.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps:

    684
    /organism="unknown"
    /mol_type="genomic DNA"

                                                                                                                                                                                                                                                                                                            684 r
US F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (1-684)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Location/Qualifiers
                                                                                                                                                                                                                                                                                                                            Sequence 16 from patent
AR428736
AR428736.1 GI:40188466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           x AR428736
                                                                                                                                                                                                                                                    AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                2.19e-81
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                               Unknown.
Unclassified.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-718-311-4 (1-165)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                 AR428736
                                                                                                                                                                                                                                                                                                                                                                      Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Alignment Scores:
Pred. No.:
Score:
                                        61
                                                             181
                                                                                                      241
                                                                                                                                               301
                                                                                                                                                                                       361
                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                     161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           247
                  121
                                                                                   81
                                                                                                                          101
                                                                                                                                                                                                            141
                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 41
 41
                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     307
                                                                                                                                                                                                                                                                                                                                     ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bource
                                                                                                                                                                                                                                                                                                                            DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                       AR428736
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                            JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORIGIN
```

246

40

20

306

9

426

80

g

ò

δ 셤 ठे

Db 427 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCCTTCCT	Db 487 AGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC	CTATCTGTTC 546
Oy 101 SerGlyProGluLeualaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120	Qy 121 ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly	/LeuTrpGly 140 CrGrGGGG 606
Qy 121 ThrSerSerThrLeuThrArgAspPhelleGlulleGlyArgAspAlaGlyLeuTrpGly 140 Db 547 ACATCATCGACATTAACCCGGGACTTAATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG 606	Qy 141 ArgargSerArgLeuArgLeuSerGlyLySProLeuLeuLeuThrGluLeuPheLeuPro	uPheLeuPro 160 STTTTACCG 666
Qy 141 ArgargSerArgLeuArgLeuSerGlyLySProLeuLeuThrGluLeuPheLeuPro 160 Db 607 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACG 666	Oy 161 AlaSerProLeuTyr 165	
Qy 161 AlaserProteutyr 165 Db 667 GCGTCACCGTTGTAC 681	AX382258	PAT 18-MAR-2002
RESULT 8 AX329368 LOCUS AX329368 AX329368 COCIS AX329368 AX329368 AX329368 VERSION AX329368 VERSION AX329368 AX329368.1 GI:18102367	AX382258 IN GI:19577037 AX382258.1 GI:19577037 Synthetic construct synthetic construct other sequences; artifi	
AETWOKUS : SOURCE SOURCE SOURCE ORGANISM SYNTHETIC CONSTRUCT ORGANISM SYNTHETIC CONSTRUCT CONTINUED OTHER SEQUENCES.	REFERENCE 1 AUTHORS Flint,D., Meyer,K. and Viitanen,P.V. TITLE Sinapolyglucose:malate sinapolyltransferase form malate from benozic acid glucosides	ate conjugates
REFERENCE 1 AUTHOR Meyer,K., van Dyk,D.E. and Viitanen,P.V. TITLE High level production of p-hydroxybenzoic acid in green plants JOURNAL Patent: WO 0194607-A 7 13-DEC-2001;	JOURNAL Patent: WO 0204653-A 16 17-JAN-2002; E.I. DUPONT DE NEMOURS AND COMPANY (US) FEATURES Location/Qualifiers source 1684	
E.I. Dupont De Nemours (US) FEATURES Location/Qualifiers 1. 684 /organism="synthetic construct" /mol Type="massigned DNA" / An Total Language DNA"	/organism="synthetic construct" /mol_type="unassigned DNA" /db_xref="taxon:32630" /note="open reading frame of the chloropla fusion protein"	chloroplast-targeted CPL
/noce="synthetic CPL"	Scores:	
ignment Scores: 2.19e-81 ore: 854.00 rcent Similarity: 100.0\$ ery Match: 100.0\$	Pred. No.: 2.19e-81 Length: 684 Score: 654.00 Matches: 165 Percent Similarity: 100.0% Conservative: 0 Best Local Similarity: 100.0% Mismatches: 0 Ouery Match: 2 Gaps: 0	
2 Gaps:	US-10-718-311-4 (1-165) x AX382258 (1-684)	
-10-718-311-4 (1-165) x AX329368 (1-684)	•	20
UY I MetserHisProAlaLeuThrGinLeuArgAlaLeuArgTyrCysLysGluILeProAla 20 	Db 187 ATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGC	SATCCCTGCC 246
21 LeuaspproGlnLeuleuaspTrpLeuleuLeuGluaspSerWetThrLysargPheGlu	Db 247 CTGGATCCGCAACTGCCTCGACTGCTGTGTGTGTTTTCATGACAAACGTTTTGAA	
Db 247 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 306 Qy 41 GlnGlnGlyLySThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu 60	Oy 41 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAenGlu 	iGlnAsnGlu 60 CAGAATGAA 366
	Qy 61	
Qy 61 IleProGluGluLeuBroLeuLeuBroLysGluSerargTyrTrpLeuArgGluIleLeu 80	Db 367 ATCICCEGAAGAACTGCTGCTGCTGCTGTTCTCGTTACTGGTTACGTGAAATTTTG Qy 81 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValValProValSerThrLeu	TTACGTGAAATTTTG 426 ProvalSerThrLeu 100
81 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu	427	4 8
427 TTATGTGCCGATGGTGAACGGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA		
OY 101 SerGiyerodinggahabenginnyshedoliyhyaThrefoleddiyhigillill	DD 487 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACC	TATCTGTTC 546

a

ò

셤

ò

```
/transl_table=11
/protein_id="AAA17026.1"
/db_xrefe"GI:347887"
/translation="RRSEVNFDTQQMIDFINRFNTNKMLIDKNNNFFIQLIDQALRST
DDMIRANVWHLYKEWIRSDDVSPIFIETEDNLRTFNTNELTRNDNIFILESSVDDGPV
MVVSSQRLHDMLNPTKDTNWNSTYIYKSRHEMLPVNLTGETLFSSKSHGKYALFPIFF
ASWRAHRIWNKGV"
                                                                                                                                                        ECOUBIA 14-hydroxybenzoate octaprenyl transferase (ubiA) gene, 5'end and chorismate lyase (ubiC) gene, complete cds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="mshpaltquralryckeipaldpqlldwilledsmtkrfeqqgk
TVSVTMIREGFVEQNEIPEELPLLPKESRYWLREIILCADGEPWLAGRTVVPVSTLSG
PELALQKLGKTPLGRYLFTSSTLTRDFIEIGRDAGLWGRRSRLRLSGKPLLLTELFLP
                  800
                                                                                                                                                                                                                                                                                                                                               Bacteria; Proteobacteria, Gammaproteobacteria, Enterobacteriales, Enterobacteriaceae; Escherichia.

Enterobacteriaceae; Escherichia.

I (bases I to 1998)

Wu, G., Williams, H.D., Gibson, F. and Poole, R.K.

Mutants of Escherichia coli affected in respiration: the cloning and nucleotide sequence of tulia, encoding the membrane-bound p-hydroxybenzoate:octaprenyltransferase
J. Gen. Microbiol. 139 (Pt. 8), 1795-1805 (1993)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   <1. .524
/note="ORF; the sequence before nucleotide number 110
might not be genuine. Three Clai sites, which is the
enzyme used for cloning, were identified in this region,
so it could be a cloning artifact"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             entry
                                                                                                                                                                                                                                        4-hydroxybenzoate octaprenyl transferase; aerobic respiratory deficiency; chorismate lyase; membrane-bound protein; prenyltransferase; transferase; ubiA gene; ubiC gene; ubiquinone biosynthesis.
/note="The last part of this ORF is to be found in (
K00127.; ORF"
/codon startz table=11
/producT="4-hydroxybenzoate-octaprenyl transferase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /organism="Escherichia coli"
/mol type="unassigned DNA"
/strain="K-12"
/db xref="taxon:562"
/map="91.8 min"
/tissue_lib="cosmid"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               coli"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon start=1
/transT_table=11
/product="chorismate lyase"
/protein_id="AAA17027.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'db_xref="GI:347888"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                      161 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene="ubic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             747. .1244
/gene="ubic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1257. .>1498
/gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1257. .1498
/gene="ubiA"
                                                                                                                                                                                                                             M96268.1 GI:347886
                                                                                                                                                                                                                                                                                                                  Escherichia coli
                                                                                                                                                                                                                                                                                                                                  Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8409922
                                                                                                                                                                                                           M96268
                       741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
                                                                                                                                                          LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                  ORGANISM
                                                                                                                                                                                                           ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
PUBMED
FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RBS
gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                           RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CDS
                                                                                                                                             ECOUBIA
                                                                                                                                                                                                                                                                                                                    SOURCE
                                                                               ద
                                                    8
                                                                                                                                                                                                                                               PAT 08-AUG-2001
                                      909
                                                                      ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                       999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               681 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG 740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu 60
                                                                                                                                                                                                                                                                                                                                                                                                                                    Development of genetically engineered bacteria for production of selected aromatic compounds
Patent: US 6210937-A 24 03-APR-2001;
| IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                          CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTTACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                 1 (bases 1 to 854)
Ward, T.E., Watkins, C.S., Bulmer, D.K., Johnson, B.F. and
Amaratunga, M.
                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  854
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                 DNA
                                                                                                                                                                                                                                               AR144788 854 bp I
Sequence 24 from patent US 6210937.
AR144788.1 GI:15106655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1. .854
/organism="unknown"
/mol_type="unassigned
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-718-311-4 (1-165) x AR144788 (1-854)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                       2.79e-81
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                     Unclassified.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                    Unknown.
                                                                                                                                                                                                                                                                                                                                                      Unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Alignment Scores:
Pred. No.:
                                  547
                                                                    141
                                                                                                       607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            621
   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                           LOCUS
DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
                                                                                                                                                                                                              RESULT 10
AR144788
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
```

g

ð

දු පු

셤

ઠે

8 8 8

g

ò පු ઠે g

g ઠ

셤

ð

g

ò 엄 ò g ð ద ò 셤 ઠે g ò 셤

õ

```
ECOUBICA 2000 bp DNA linear BCT 26-APR-1993 Bscherichia coli chorismate lyase (ubiC), 4-hydroxybenzoate octaprenyl transferase (ubiA) genes, complete cds, and sn-glycerol-3-phosphate acyltransferase (plsB) genes, 3' end.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             41 GlnGlnGlyLysThrValSerValThrMetlleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              680 AGGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              560 ATCCCCGAAGAACTGCCGCTGCTGCTGGAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SerGlyProGluLeuAlaLeuGlnLygLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTTACTAACAGAACTGTTTTTACCG
    C12N15/09, A61K31/12, A61K31/12, C07H21/04, C12N1/21, C12P7/66, PC (C12N1/21, PC C12N1/21, PC C12N1/21, PC C12N1/21, PC C12N1.01); CC ctopology: Linear; EH Key Linear; EH Key Linear; FT Source Loganism='Escherichia coli' FT Source Loganism='Escherichia coli' FT CDS S90. .1762 FT CDS S90. .1762 FT CDS S90. .1762 FT FT CDS Product='UbiA protein'.
          Б
                                                                                                                                                  Jurce 1..2000

Organism='Escherichia col'
380..377

Product='Ubic protein'
890..1762

Location/Qualifiers
1..2000

/organism="Escherichia coli"
/mol type="genomic DNA"
/db_xref="taxon:562"
                                                                                                                                                                                                                                                                                                                                                                                                                                                    2000
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-718-311-4 (1-165) x E11274 (1-2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              161 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7.02e-81
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     860
                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 13
ECOUBICA
                                                                                                                                                                                                                                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                         ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            名
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Elizio 1 Gillo 2013

Escherichia coli

Escherichia coli

Escherichia coli

Escherichia coli

Bacteria, Proteobacteria; Gammaproteobacteria; Enterobacteriales;

Enterobacteriaceae; Escherichia.

Enterobacteriaceae; Escherichia.

Enterobacteriaceae; Escherichia.

Enterobacteriaceae; Escherichia.

Enterobacteriaceae; Escherichia.

Enterobacteriaceae; Escherichia.

Enterobacteriales;

Enterobacteriales;

Anterobacteriales;

Enterobacteriales;

En
/protein_id="AAA17028.1"
/db_xref="G1:347889"
/translation="MEWSLTQNKLLAFHRLMRTDKPIGALLLLWPTLWALWVATPGVP
QLWILAVFVAGVWLMRAAGCVVNDYADRKFDGHVKRT"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1107 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG 1166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1167 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTACCG 1226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          29-SEP-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     101 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                       806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           926
                                                                                                                                                                                                                                                                                                                                             20
                                                                                                                                                                                                                                                                                                                                                                                                                                40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LeudapProGlnLeuLeudapTrpLeuLeuCludapSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   807 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               41 GlnGlnGlyLysThrValSerValThrMetileArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCy8LysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                  Argreacacccccccrraacccaacrcccrccccccrarrcraaacacarccracc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Escherichia coli
JP 1996107789-A/1
30-APR-1996
13-OCT-1994 JP 1994273071
MATSUDA HIDEYUKI, KAWAMUKI MAKOTO, NAKAGAWA TSUYOSHI PC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       linear
                                                                                                                                                     1498
165
0
0
0
                                                                                                                                                  Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2000 bp
                                                                                                                                                                                                                                                                                               US-10-718-311-4 (1-165) x ECOUBIA (1-1498)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  E11274
ubic and ubiA gene.
E11274
E11274.1 GI:22024916
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               161 AlaSerProLeuTyr 165
                                                                                                                                                  5.13e-81
854.00
100.0%
100.0%
                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                               Alignment Scores
                                                                                                                                                                                                                                                                                                                                                                                                                              21
                                                                                                                                                                                                                                                                                                                                        ч
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               E11274
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMMENT
                                                                                       DRIGIN
                                                                                                                                                                        Score:
```

439

499

559

9

100 619 120 739 140 799 859

619

```
ECOUBIPLS

Becherichia coli 4-hydroxybenzoate octaprenyl transferase (ubiA)
gene complete cds, chorismate lyase (ubiC) gene complete cds,
sn-qlycerol-3-phosphate acyltransferase (plsB) gene, 3' end.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            160
no additional details
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Escherichia coli W3110
Bacteria, Proteobacteria, Gammaproteobacteria, Enterobacteriales,
Enterobacteriaceae, Escherichia.
1 (bases 1 to 2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                M93413.1 GI:148106
4-hydroxybenzoate octaprenyl transferase; chorismate lyase; plsB
gene; sn-glycerol-3-phosphate acyltransferase; ubiA gene; ubiC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121 ThrSerSerThrLeuThrArgAgpPhelleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      credarccecaacrecreacrescrerrecresasearrecareacaaacerrrreaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1leProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             560 ATCCCCGAAGAACTGCCGCTGCCGGAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                  /codon start=1
/transl_table=11
/product="sn-glycerol-3-phosphate acyltransferase"
/protein id="AAA24713.1"
/db_xref="G1:148102"
/translation="WKVYQLLAELITSDVRLTIESATQGEG"
                                                                                                                                                                                                                                                                               2000
165
0
0
0
  'experiment="experimental evidence,
                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                     Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                   (1-2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                   * ECOUBICA
                        recorded"
/citation=[1]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Escherichia coli W3110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7.02e-81
854.00
100.0%
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AlaSerProLeuTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-718-311-4 (1-165)
                                                                                                                                                                                                                                                                                                                                Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               M93413
                                                                                                                                                                                                                                                            Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ౼
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     860
                                                                                                                                                                                                                                                                                                                                                                                 Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 14
ECOUBIPLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
                                                                                                                                                                                                                ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOURCE
                                                                                                                                                                                                                                                                                                               Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon start=1
/transl_table=11
/product="chorismate lyase"
/product="chorismate lyase"
/product="chorismate lyase"
/product="chorismate lyase"
/product="chorismate lyase"
/db_xref="G1:148100"
/db_x
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /translation="MEWSITQNKLLAFHRLMRTDKPIGALLLLWPTLWALWVATPGVP
QLMILAVFYKGVWLMRAAGCVVNDYADRKFDGHVKRTANRFLESGAVTEKBARALFVV
LVLISFLLVLTLNTWTILLSTAALLAWVPPFMKRYTHLPQVVLGAAFGWSIPWAFAA
VSESVPLSCWLMFLANILWAVAYDTQVAMVDRDDDVKIGIKSTAILFCQYDKLIIGIL
OIGVLALMAIIGELNGLGWGYYWSILVAGALFVYQQKLIANREREACFKAFMNNYVG
                                                                                                                                                                                                                                                                                                                                                         ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'experiment="experimental evidence, no additional details
ecorded"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'experiment="experimental evidence, no additional details
                                                                    Bacherichia coli Willo
Escherichia coli Willo
Escherichia coli Willo
Bacteria, Proteobacteria, Gammaproteobacteria, Enterobacteriales,
Enterobacteriaceae, Escherichia.
1 (bases 1 to 2000)
Lightner, V.A., Bell, R.M. and Modrich, P.
The DNA sequences encoding plas and dgk loci of Escherichia coli 6309817
                                                                                                                                                                                                                                                                                                     2 (bases 1 to 2000)
Nichols, B.P. and Green, J.M.
Cloning and Sequencing of Escherichia coli ubiC and purification
                                                                                                                                                                                                                                                                                                                                                                            chorismate lyase
Unpublished (1992)
Original source text: Escherichia coli (sub_strain W3110, strain
K-12) (library: Kohare lambda-1F8) DNA.
Location/Qualifiers
                        4-hydroxybenzoate octaprenyl transferase; chorismate lyase; plsB
gene; sn-glycerol-3-phosphate acyltransferase; ubiA gene; ubiC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      --> p-hydroxybenzoate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                390. .1762
| gene="ubiA"
190. .1762
| forms="ubiA"
| function="enzymatic - 3-octaprenyl-4-hydroxybenzoate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
|transl_table=11
|product="4-hydroxybenzoate-octaprenyl_transferase"
|product id="AAA24712.1"
|db_xref="GI:148101"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="pl8B"
/EC_number="2.3.1.15"
/function="lysophosphatidic acid synthesis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /organism="Escherichia coli W3110"
/mol_type="genomic DNA"
/strain="K-12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    function="enzymatic chorismate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /tissue_lib="Kohare lambda-1F8"
380. .877
/gene="ubic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /sub_xref="taxon:316407"
/map="91.8 min"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="plsB"
complement(1917. .2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         complement (1917. .2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LVLFLGLAMSYWHF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      recorded"
/citation=[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       citation=[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     180. .877
/gene="ubic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            oyruvate"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1. .2000
                                                                                          SOURCE
ORGANISM
                                                                                                                                                                                     REFERENCE
AUTHORS
TITLE
JOURNAL
PUBMED
                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                                                                                                                                     JOURNAL
  VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                COMMENT
```

```
BCT 05-0CT-1992
                                                                                                                                                                                                                                                                                      560 ATCCCCGAAGAACTGCCGCTGCTGCTGCTGTTACTGGTTACGTGAAATTTTG 619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       101 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121 ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               500 cagcaggaaaaacggraagcgrgacgargarccccgaagggrrrgrcgagcagaargaa 559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      81 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100

        MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
        20

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         4-hydroxybenzoate octaprenyl transferase; 4-hydroxybenzoate
synthetase; chorismate lyase.
Escherichia coli
Becherichia coli
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriacese; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Nishimura, K., Nakahigashi, K. and Inokuchi, H.
Location of the ubiA gene on the physical map of Bscherichia coli
J. Bacteriol. 174 (17), 5762 (1992)
                                                                                                                                                                                                                                                                                                                                                                                          GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product="sn-glycerol-3-phosphate acyltransferase"
/protein_id="AAA24718.1"
/db_xref="GI:148109"
/translation="MKVYQLLAELITSDVRLTIESATQGEG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ECUBIAC 2034 bp DNA linear E.coli ubiC and ubiA genes for chorismate lyase and thydroxybenzoate octaprenyltransferase.
                                                                                                                 2000
165
0
0
0
                                                                                                                                 Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                    Length:
                                                                                                                                                                                                  Gaps:
                                                                                                                                                                                                                               US-10-718-311-4 (1-165) x ECOUBIPLS (1-2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                161 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              860 GCGTCACCGTTGTAC 874
                                                                                                                    7.02e-81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2 (bases 1 to 2034)
Nishimura, K.
                                                                                                                                 854.00
100.0%
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            X57434
X57434.1 GI:43233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Direct Submission
                                                                                                                                               Percent Similarity:
Best Local Similarity:
                                                                                                     Scores:
                                                                                                                                                                                                                                                              -
                                                                                                                                                                                                                                                                                                                                                                                           41
                                                                                                                                                                                  Query Match:
                                                                                                                    ..
No
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 15
ECUBIAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
TITLE
JOURNAL
PUBMED
PUBMED
REFERENCE
AUTHORS
TITLE
                                                                                                     Alignment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VERSION
KEYWORDS
                                                                     ORIGIN
                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
/transT_table=11
/producE=chorismate lyase"
/producE=chorismate lyase"
/protein_id="AAA4716.1"
/db_xref="G1:148107"
/translation="MSHPALTQLRALRYCKEIPALDPQLLDWLILEDSMTKRFEQOGK
TVSVTMIREGFVEQNEIPEELPLLFKESRYWLREILLCADGEPWLAGRTVVPVSTLSG
PELALQKIGKTPLGRYLETSSTLTRDFIEIGRDAGLWGRRSRLRLSGRFLLTFELFLP
ASPLY"
                                                                                                   벙
                                                                                                                                                                                                                                                                                                                                                                                                                                                                note="N-terminal amino acid sequence of chorismate lyase
.NH2-SHPALTQLRALRYCEIPAL-"
/citation=[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /experiment="experimental evidence, no additional details
recorded"
                                                                                                                                                                                                                                                                                                                                                                                                                                        'experiment="experimental evidence, no additional details
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /gene="plsB"
/Bc_number="2.3.1.15"
/function="lysophosphatidic acid synthesis"
/experiment="experimental evidence, no additional details
                                                               2 (bases 1 to 2000)
Nichols, B.P. and Green, J.M.
Cloning and sequencing of Escherichia coli ubiC and purification
   Lightner, V.A., Bell, R.M. and Modrich, P. The DNA sequences encoding plaB and dgk loci of Escherichia coli J. Biol. Chem. 258 (18), 10856-10861 (1983) 6309817
                                                                                                                                                                 strain
                                                                                                                                                                                                                                                                                                                                                                                                          function="enzymatic chorismate --> p-hydroxybenzoate +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                890. 1762
/gene="ubiA"
!unction="enzymatic - 3-octaprenyl-4-hydroxybenzoate
synthesis"
                                                                                                                                                            Original source text: Escherichia coli (sub_strain W3110,
K-12) (library: Kohara lambda) DNA.
Location/Qualifiers
                                                                                                                                                                                                            1. .2000
/organism="Escherichia coli W3110"
/mol_type="genomic DNA"
/srrain="K-12"
                                                                                                               chorismate lyase
J. Bacteriol. 174 (16), 5309-5316 (1992)
1644758
                                                                                                                                                                                                                                                                        /sub_gtrain="W3110"
/db_xef="taxon:316407"
/map="91.8 min"
/tissue lib="Kohara lambda"
380. 877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement (1917. .2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement (1917. .2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LVLFLGLAMSYWHF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      citation=[1]
                                                                                                                                                                                                                                                                                                                                                        /gene="ubic"
380. .877
                                                                                                                                                                                                                                                                                                                                                                       380. .877
/gene="ubic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              citation=[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="plsB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                           pyruvate"
                                                                                                                                                                                                                                                                                                                                                                                                                                                      recorded"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                number=2
AUTHORS
TITLE
JOURNAL
PUBMED
REFERENCE
AUTHORS
TITLE
                                                                                                                            JOURNAL PUBMED
                                                                                                                                                                                                                                                                                                                                             gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOS
                                                                                                                                                                                             FEATURES
                                                                                                                                                               COMMENT
```

9

```
/codon start=1
/transI_table=11
/product="4"+0pdroxybenzoate octaprenyltransferase"
/product="4"+0pdroxybenzoate octaprenyltransferase"
/protein id="CAA40682.1"
/db_xref="G1:43235"
/db_xref="G0, p26601"
/db_xref="GAA6000"
/db_xref="GAA600"
/db_xref="GAA600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /trānslation="MRLLRFCCVLDHLICFTSPVNTFLRYNAFTLCNGEFGMSHPALT
TALALRYCKET PALDPQLLLDHALLEDSPMTRREGQGKTVSVTWTREGFVEQNETPEED
PLIEVESSTWEIRELICADGEPWIAGRTVVPVSTLSGPELALGKLGKTPLGRYLFTSS
TLTRDFIEIGRDAGLWGRRSRLRLSGKPLLLTELFLPASPLY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        80
Submitted (28-JAN-1991) K. Nishimura, Faculty of Sciences, Kyoto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LeuhapProGlnLeuleuNapTrpLeuleuGluhapSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              credarcedeacrederederegereregesedarrecardadaacerriraaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GinGinGlyLysThrValSerValThrMetileArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGCAAGGGTTTTGTCGAGCAAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /transT_table=11
product="4-hydroxybenzoate synthetase"
/protein_id="CAA40681.1"
db_xref="G1.43234"
db_xref="G0A:P26602"
/db_xref="UniProtKB/Swiss-Prot:P26602"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2034
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length:
Matches:
Conservative:
Mismatches:
Indels:
                              University, Sakyo-ku, Kyoto 606, Japan
Location/Qualifiers
                                                                                                             /organism="Escherichia coli"
/mol_type="genomic DNA"
/strain="K12 W3110"
                                                                                                                                                                                                                                                                /clone="634"
/clone_lib="Kohara library"
137. .142
159. .164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-718-311-4 (1-165) x ECUBIAC (1-2034)
                                                                                                                                                                                                      /db_xref="taxon:562"
/map="91.7 min"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    codon start=1
transl_table=
                                                                                                                                                                                                                                                                                                                                                           /gene="ubic"
291. .8°°
                                                                                                                                                                                                                                                                                                                                                                                                                                    291. .899
/gene="ubic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           912. .1784
/gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  912. .1784
/gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7.15e-81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                       -35 signal
-10 signal
gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              522
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  582
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        41
                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ..
9
   JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
```

```
821
                701
                                120
                                                761
                                                                  140
                                                                                                  160
                                                                                                                    881
LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
        101 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                          ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                          ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuTeuThrGluLeuPheLeuPro
                                                                                                            completed: May 30, 2006, 05:53:01
ne : 5004.73 secs
                                                                                                                                    161 AlaSerProLeuTyr 165
                                                                                                                                                    896
                                                                                                                                                      GCGTCACCGTTGTAC
                                                                                                   141
                                                                  121
81
                642
                                                                                                                                                    882
                                                                                                                                                                              Search con
Job time
           a
                                             g
                                                                              셤
                                                                                                                  a
                                                                                                                                                  g
                          ⋧
                                                                 ò
                                                                                               ò
                                                                                                                                     ઠે
```

Sequence 413, Appl Sequence 343, Appl Sequence 343, Appl Sequence 75, Appl Sequence 1581, Appl Sequence 1232, Appl Sequence 1232, Appl Sequence 1721, Appl Sequence 14280, Appl Sequence 14280, Appl Sequence 14280, Appl Sequence 12115, Appl Sequence 3, Appli Sequence 3, Appli Sequence 12115, Appli Sequence 1, Appli Sequence 1, Appli Sequence 1, Appli Sequence 10731, Appli Sequence 205, Appli Sequence 11, Appli Sequence 205, Appli Sequence 205, Appli Sequence 11, Appli Sequence 205, Appli Sequence 205, Appli Sequence 11, Appli Sequence 11, Appli Sequence 11, Appli Sequence 1265, Appli Sequence 1265, Appli Sequence 205, Appli Sequence 205, Appli Sequence 1265, Appli Sequence 1266, Appli

OM protein

Run on:

Sequence:

Searched:

```
RESULT 1
US-09-896-866B-12
Sequence 12, Application US/09896866B
Fatent No. 6642036
GENERAL INFORMATION:
APPLICANT: Flint, Dennie
APPLICANT: Vitanen, Paul
TITLE OF INVENTION:
FILE REFERENCE: BC1034 US NA
CURRENT APPLICATION NUMBER: US/09/896,866B
CURRENT APPLICATION NUMBER: 105/09/896,866B
FILE REFERENCE: 2001-06-29
PRIOR APPLICATION NUMBER: 2001-06-29
PRIOR PILING DATE: 2000-07-07
NUMBER OF SEQ ID NOS: 19
SSCYIND NO 12
SSTOID NO 12
SSTOID NO 12
US-09-252-991A-7442
US-09-56-002-41
US-09-56-002-41
US-09-56-002-41
US-09-522-991A-7361
US-09-5128-352-343
US-09-5128-352-343
US-09-949-016-15816
US-09-949-016-15816
US-09-949-016-15816
US-09-949-016-1688
US-09-949-016-16428
US-09-949-016-14279
US-09-949-016-14279
US-09-949-016-14280
US-09-949-016-12153
US-09-103-840h-1
US-09-103-840h-1
US-09-103-840h-1
US-09-103-840h-1
US-09-103-840h-1
US-09-103-840h-1
US-09-103-840h-1
US-09-103-840h-1
US-09-949-011-36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-718-311-4 (1-165) x US-09-896-866B-12 (1-495)
6 630 3

4 269223 3

4 1269223 3

2 1248 3

2 1248 3

5 2127 3

7 84839 3

6 601 3

6 601 3

6 62154 3

4 6463 2

6 62254 3

4 77535 3

4 77535 3

1 111282 3

1 111282 3

4 4401755 3

4 440175 3

4 440175 3

4 440175 3

4 440175 3

4 440175 3

4 440175 3

4 440175 3

4 440175 3

4 440175 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5.04e-98
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: DNA; ORGANISM: Escherichia coli US-09-896-866B-12
                                                                                                                                                                                                                                                                                                  1581
2055
2055
9461
4792
4792
9173
9174
                                                                                                                                                                                                                                                                                                                                                                                                            1090
57392
57402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
Query Match:
 Alignment Scores:
           00000000000000
                                                                                                                                                                                                                                                                                                                                                                              Sequence 12, Appl
Sequence 3, Appli
Sequence 16, Appl
Sequence 24, Appl
Sequence 25, Appl
Sequence 1234, Ap
Sequence 3122, Ap
                                                                                           (without alignments)
2304.491 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Sesued_Patents_NA:*
| FMC_Celerra_SIDS3/ptodata/2/ina/1_COMB.seq:*
| FMC_Celerra_SIDS3/ptodata/2/ina/5_COMB.seq:*
| FMC_Celerra_SIDS3/ptodata/2/ina/6_COMB.seq:*
| FMC_Celerra_SIDS3/ptodata/2/ina/6_COMB.seq:*
| FMC_Celerra_SIDS3/ptodata/2/ina/f_COMB.seq:*
| FMC_Celerra_SIDS3/ptodata/2/ina/PCOMB.seq:*
| FMC_Celerra_SIDS3/ptodata/2/ina/PCOMB.seq:*
| FMC_Celerra_SIDS3/ptodata/2/ina/PCOMB.seq:*
| FMC_Celerra_SIDS3/ptodata/2/ina/PCOMB.seq:*
| FMC_Celerra_SIDS3/ptodata/2/ina/PCOMB.seq:*
| FMC_Celerra_SIDS3/ptodata/2/ina/Packfiles1.seq:*
                                                                                                                           US-10-718-311-4
854
1 MSHPALTQLRALRYCKEIPA......RLSGKPLLLTELFLPASPLY 165
                                                                            May 29, 2006, 11:01:13 ; Search time 200.955 Seconds
          GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd
                                                     - nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-896-866B-12
US-09-855-341-3
US-09-896-866B-16
US-09-855-341-7
US-09-064-693A-24
US-09-064-693A-25
US-09-480-039A-1234
US-09-43-681A-3123
                                                                                                                                                                                                                                                                     Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                 1403666 seqs, 935554401 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUMMARIES
                                                                                                                                                                                                                                                                                                                                  Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                        ), Xgapext
), Ygapext
), Fgapext
), Delext
                                                                                                                                                                                                                                                                                               Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query
Match Length DB
                                                                                                                                                                          BLOSUM62
Xgapop 10.0 ,
Ygapop 10.0 ,
Fgapop 6.0 ,
Delop 6.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     100.0
100.0
100.0
100.0
78.8
47.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            101
101
101
101
                                                                                                                             Title:
Perfect score:
                                                                                                                                                                           Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     954
954
854
854
854
854
854
801
```

Database :

495 165 0 0 0

Length: Matches: Conservative: Mismatches: Indels:

Gaps:

12645978

Result

```
a
                                             ద
                                                                                 g
                                                                                                                        셤
                                                                                                                                                               셤
                                                                                                                                                                                                                                            유
                                                                                                                                                                                                                                                                                  셤
                      ⋧
                                                            ∂
                                                                                                        ò
                                                                                                                                               ò
                                                                                                                                                                                    ò
                                                                                                                                                                                                    음
                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                          121 CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGTTTGTCGAGCAGAATGAA 180
                                                                                                                            240
                                                                                                                                                100
                                                                                                                                                         SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                               ThrSerSerThrLeuThrArgAspPhelleGlulleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                420
                                                                                                                                                                                                                                                                 ArgArgSerArgLeuArgLeuSerGlyLyBProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                   9
                                                                                                          80
        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla 20
                                                                                                       1 ATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCTGTTTGTAAAGAGATCCCTGCC
                                                                                                                                              LeuCygAlaAspGlyGluProTrpLeuAlaGlyArgThrValValValProValSerThrLeu
                                                                                                                                                                                                                                      ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGGG
                                                                 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                           P-HYDROXYBENZOIC ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Unknown Organism: E. coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                          Patent No. 6683231
GENERAL INFORMATION:
APPLICANT: VITTANEN, PAUL V.
APPLICANT: WAN DYK, DEEW
TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-H;
TITLE OF INVENTION: IN GREEN PLANTS
TITLE OF INVENTION: IN GREEN PLANTS
CURRENT APPLICATION NUMBER: US/09/855,341
CURRENT FILING DATE: 2001-05-15
NUMBER OF SEQ ID NOS: 16
SOFTWARE: MICROSOFT OFFICE 97
SEQ ID NO 3
LENGTH: 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-718-311-4 (1-165) x US-09-855-341-3 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              οę
                                                                                                                                                                                                                                                                                                                                                                 ; Sequence 3, Application US/09855341
; Patent No. 6683231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; FEATURE:
; OTHER INFORMATION: Description
US-09-855-341-3
                                                                                                                                                                                                                                                                                                       161 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                 5.04e-98
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: DNA ORGANISM: Unknown Organism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score:
Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                              RESULT 2
US-09-855-341-3
                            21
                                                61
                                                                  41
                                                                                                         61
                                                                                                                            181
                                                                                                                                              81
                                                                                                                                                                                     101
                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                  141
                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match:
DB:
                                                           දු පු
                                                                                                      8 8 8
                                                                                                                                                            6 6 6 6
                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                          셤
     원
                          ò
                                         g
                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                      ઠે
```

```
Sequence 16, Application US/09896866B

Sequence 16, Application US/09896866B

Sequence 16, Application US/09896866B

GENERAL INFORMATION:

APPLICANT: Filint, Demnis

APPLICANT: Weisen, Paul

ITILE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugates

TITLE OF INVENTION: Benzoic Acid Glucosides

TITLE OF INVENTION: Benzoic Acid Glucosides

FILE REFERENCE: BC1034 US NA

CURRENT APPLICATION NUMBER: US/09/896,866B

FILE REFERENCE: 2001-06-29

FRIOR FILING DATE: 2000-07-07

NUMBER OF SEQ ID NOS: 19

SOFTWARE: Microsoft Office 97

LENGTH: 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME/KEY: misc_feature
OTHER INFORMATION: open reading frame of the chloroplast-targeted CPL fusion protein
                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                           140
                                                                                                                                                                                                                                                                                                                                                                                                                                                    160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       480
                   61 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 120
                                                                                                           121 cagcagggaaaaacggraagggrgacgargarcccccgaagggrrrcrccagcaacgaargaa 180
                                                                                                                                                                        181 ATCCCGAAGAACTGCCGCTGCTGCTGAAGAGTCTCGTTACTGGTTACGTGAAATTTTG 240
                                                                                                                                                                                                                       420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                  80
                                                                                                                                              101 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                    141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                      GlnGlnGlyLygThrValSerValThrMetIleArgGluGlyPheValGluGlnAenGlu
                                                                                                                                                                                                                                                                                                                                                                         ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                 361 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                684
0 0
0 0
0 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-4 (1-165) x US-09-896-866B-16 (1-684)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              161 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               481 GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA ORGANISM: Artificial Seguence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8.29e-98
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-896-866B-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-896-866B-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
Pred. No.:
21
                                                                        41
                                                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match:
DB:
```

```
121 ThrSerSerThrLeuThrArgAspPheileGluIleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                   81 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                                                                                                                                     101 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                        141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                  61 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGlulleLeu
                                                                                                                                                                                                                         487 AGGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                              547 ACATCATCGACATTAAACCCGGGACTTTAATTGAGATAGGCCGTGATGCCGGGTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                           GinGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; Sequence 24, Application US/09064693A
; Patent No. 6210937
; GENERAL INFORMATION:
    APPLICANT: Ward, Thomas E.
    TITLE OF INVENTION: DEVELOPMENT OF GENETICALLY
    TITLE OF INVENTION: DEVELOPMENT OF GENETICALLY
    TITLE OF INVENTION: OF A SPECIFIC PLASTICS PRECURSOR
    NUMBER OF SEQUENCES: 26
    CORRESPONDENCE ADDRESS:
    ADDRESSEE: W. Gary Goodson
    ADDRESSEE: INPEL-Lockheed Martin Idaho
    ADDRESSEE: Technologies Co.
    STREET: P.O. Box 1625
    COTY: Idaho Falls
    COTY: Idaho Falls
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COUNTRY: USA
ZIP: 83415-3810
COMPUTER READBLE FORM:
MEDIUM TYPE: Diskette, 3.5 inch, 1.44 Mb storage COMPUTER: Toshiba Satellite Pro T2150CDS
OPERATING SYSTEM: Windows95
SOFTWARE: Word Perfect 7.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/064,693A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LIT-PI-296
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILING DATE:
ATTORNEY/AGENT INFORMATION:
NAME: W. Gary Goodson
REGISTRATION NUMBER: 2, 387
REFRENCE/DOCKET NUMBER: LITTELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEPHONE: (208)526-9469
INFORMATION FOR SEQ ID NO: 24:
SEQUENCE CHARACTERISTICS:
LENGTH: 854 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           22,387
                                                                                                                                                                                                                                                                                                                                                                                                            161 AlaSerProteuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                               667 GCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILING DATE:
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Idaho
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-064-693A-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-064-693A-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STATE: IC
     41
                          g
                                                                  ò
                                                                                             셤
                                                                                                                          ઠે
                                                                                                                                                               원
                                                                                                                                                                                                    ò
                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                   원
                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                  LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                     SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                    ThrSerSerThrLeuThrArgAspPheileGluileGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                                                                                                                                                                       141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro 160
                        247 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 306
                                                                                                    366
                                                                                                                                                                   426
                                                                                                                                                                                                                                     486
                                                                                                                                                                                                                                                                                                        546
                                                                                                                                                                                                                                                                                                                                                       607 CGACGTTCCCGCCTGCGATTAAGCGGTAAAACGCGTGTTGCTAACAGAACTGTTTTTACCG 666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                     80
                                                               41 GlnGlnGlyLysThrValSerValThrMetlleArgGluGlyPheValGluGlnAsnGlu
                                                                                    61 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGlu1leLeu
                                                                                                                                                          367 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                       427 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                     487 AGCGGGCCGGAGCTGGCGTTACAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MetSerHisBroalaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGlulleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 7, Application US/0985341

Faquence 7, Application US/0985341

GENERAL INFORMATION:

APPLICANT: VITANEN, PAUL V.

APPLICANT: WITANEN, PAUL V.

APPLICANT: WAN DYK, DREW

TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID

TITLE OF INVENTION: IN GREEN PLANTS

FILE REFERENCE: BCIO12, US NA

CURRENT APPLICATION NUMBER: US/09/855,341

CURRENT FILING DATE: 2001-05-15

NUMBER OF SEQ ID NOS: 16

SOFTWARE: MICROSOFT OFFICE 97

SEQ ID NO 7

LENGTH: 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OTHER INFORMATION: Description of Artificial Sequence: synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       684
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-718-311-4 (1-165) x US-09-855-341-7 (1-684)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         161 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: DNA
ORGANISM: Artificial Sequence
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8.29e-98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 4
US-09-855-341-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-855-341-7
21
                                                                                                                                                                                                    81
                                                                                                                                                                                                                                                                     101
                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           247
                             유
                                                               ò
                                                                                       셤
                                                                                                                          ò
                                                                                                                                                            а
                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                 ŝ
                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
```

```
LIT-PI-296
FILING DATE:
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE:
FILING DATE:
ATTORNEY'AGENT INFORMATION:
NAME: W. Gary Goodson
REGISTRATION NUMBER: 22,387
REFERENCE/DOCKET NUMBER: LIT-P
TELECOMMUNICATION INFORMATION:
TELEPHONE: (208)526-9469
TELEPAX: (208)526-9469
TELEPAX: (208)526-9469
TELEPAX: (208)526-9469
TELEPAX: (208)526-9339
INFORMATION FOR SEQ ID NO: 25:
SEQUENCE CHARACTERISTICS:
LENGTH: 6641 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
STRANDEDNESS: double
JOSO9-064-693A-25
                                                                                                                                                                                                                                                                         2.74e-96
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                161 AlaSerProbeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-09-489-039A-1234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                             Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ArgArgSerArgLeuArgLeuSerGlyLygProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                           380
                                                                                                                                                                                                                                                                                                                                                     LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                    | SerGlyProGluLeuAlaLeuGlnLyBLeuGlyLyBThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                                                                                                                680
                                                                                                                                                                                                                                                                                                                                                                                                                                                     ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                    40
                                                                                                                                                                                                                                                   GlnGlnGlyLygThrValSerValThrWetIleArgGluGlyPheValGluGlnAsnGlu 60
                                                                                                                                                                                                                                                                                                      80
                                                                                                                                                                                                                                                                                                   MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                   LeudapproGlnLeuLeudapTrpLeuLeuGludapSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                     AGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                ATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCCGCTATTGTAAGAGATCCCTGCC
                                                                                                                                                                                                                                                                            CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 6

US-09-064-693A-25

Sequence 25, Application US/09064693A

Patent No. 6210937

GENERAL INFORMATION:

TITLE OF INVENTION: DEVELOPMENT OF GENETICALLY

TITLE OF INVENTION: OF A SPECIFIC PLASTICS PRECURSOR

NUMBER OF SEQUENCES: 26

CORRESPONDENCE ADDRESS:

ADDRESSEE: W. Gary Goodson

ADDRESSEE: Technologies Co.

STREET: D.O. Box 1625

CITY: Idaho Falls

STATE: Idaho Falls

STATE: Idaho Falls

COUNTRY: USA
                                    854
000
000
000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER READABLE FORM:
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 3.5 inch, 1.44 Mb storage
COMPUTER: Toehiba Satellite Pro T2150CDS
OPERATING SYSTEM: Windows95
SOFTWARE: WORD PERFECT 7.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/064,693A
                                   Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                         US-10-718-311-4 (1-165) x US-09-064-693A-24 (1-854)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              801 GCGTCACCGTTGTAC 815
                                   1.176-97
854.00
100.0%
100.0%
                                                        Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                      Alignment Scores:
Pred. No.:
Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               741
                                                                                                                                                  ч
                                                                                                                                                                          321
                                                                                                                                                                                                   21
                                                                                                                                                                                                                           381
                                                                                                                                                                                                                                                    41
                                                                                                                                                                                                                                                                             441
                                                                                                                                                                                                                                                                                                                              501
                                                                                                                                                                                                                                                                                                                                                                               261
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        141
                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                      81
                                                                                                                                                                                                                                                                                                                                                                                                       101
                                                                                                                                                                                                                                                                                                                                                                                                                              621
                                                                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        161
                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                 ò
                                                                                                                                                                          유
                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ద
```

```
Sequence 1234, Application US/09489039A; Patent No. 6610836; Patent No. 6610836; APPLICATION OF SEQUENCES RELATING TO KLEBSIELLA; TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO KLEBSIELLA; TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO KLEBSIELLA
                                                                                                                                                                                                                                                                                                                               200
                                                                                                                                                                                                                                                                                                                                                                                                                                  100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      680
                                                                                                                                                                                          380
                                                                                                                                                                                                                                                             440
                                                                                                                                                                                                                                                                                                                                                                                                560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             800
                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                            40
                                                                                                                                                                                                                                                                                                                                                                 80
                                                                                                                                                        CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                  LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ArgArgSerArgLeuArgLeuSerGlyLyBProLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             501 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    561 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          681 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                             41 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                 61 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
6641
165
0
0
0
 Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                          US-10-718-311-4 (1-165) x US-09-064-693A-25 (1-6641)
```

```
Sequence 742.7 Application US/0925291A
Sequence 742.7 Application US/0925291A
Patent No. 6551795
GREERAL INFORMATION:
GREERAL INFORMATION:
GREERAL INFORMATION:
TITLE OF INVENTION:
MUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION:
ARRUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION NUMBER: US/09/252,991A
CURRENT APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/074,788
RICH FILING DATE: 1998-02-18
PRIOR PLING DATE: 1998-02-18
PRIOR FILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
SEQ ID NO 7442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          229 AAGTGTTTACCTTATAGCCGACGCTATTGGCTAAGAGAAAATCGTCCTTTGTGGGGATAAT 288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 86 GluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGluLeu 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     289 GTACCTTGGTTATTAGGGCGAACATTAGTGCCGGAAGAGAGACATTAACGGGTGAAGATCGC 348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    106 AlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPheThrSerSerThrLeu 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          126 ThrargaspPhelleGluileGlyArgaspAlaGlyLeuTrpGlyArgargSerArgLeu 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26 LeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGluGlnGlnGlyLysThr 45
                                                                                                                                                                                                                                                                                                                                                        46 ValSerValThrMetIleArgGluGlyPheValGluGlnAsnGluIleProGluGluLeu 65
                                                                                                                                                                                                                                                                                                                                                                                                                            66 ProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAspGly 85
                                                                                                                              537
115
0 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      630
21
21
30
30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                 Conservative:
                                                                                                                                                                                                                                                    US-10-718-311-4 (1-165) x US-09-543-681A-3122 (1-537)
                                                                                                                                                                                 Mismatches:
Indels:
                                                                                                                                Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8.44e-14
186.00
43.0%
30.3%
21.8%
                                                                                                                           5.8e-41
401.00
68.6%
57.9%
47.0%
     ; SEQ ID NO 3122
; LENGTH: 537
; TYPE: DNA
; ORGANISM: Proteus mirabilis
US-09-543-681A-3122
                                                                                                                                                         Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-09-252-991A-7442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; TYPE: DNA
; ORGANISM: Pseud
US-09-252-991A-7442
                                                                                                            Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
Pred. No.:
                                                                                                                                               Score:
                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                      엄
                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 3122, Application US/09543681A

Sequence 3122, Application US/09543681A

GENERAL INFORMATION:

APPLICANT: GARY BERTON

TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PROTEUS MIRABIL

TITLE OF INVENTION: DIAGNOSTICS AND THERAPEUTICS

TITLE OF INVENTION: 2009-601

CURRENT APPLICATION NUMBER: US/09/543,681A

CURRENT PILING DATE: 2000-04-05

PRIOR FILING DATE: 1999-04-09

NUMBER OF SEQ ID NOS: 8344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   208 CTGCCGCCGCCGCTAAGTGACTGGCTGCTGGAGGACTCAATGACCCAGCGCTTTGAA 267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 268 CAACAAGGAAAGCAGGTCACCGTGACCCTGGTTAACGAAGGGTATATCGGCCGTGACGCG 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           101 SerglyProgluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLhrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGlulleProAla 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21 LeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGlu 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GlnGlnGlyLysThrValSerValThrMetlleArgGluGlyPheValGluGlnAsnGlu 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                             448 TGTGGTCCGGAGCTGGCGCTACAGCAGCTCGGCAAACTCCGGTGGGCCGATACCTGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGTCGTTCCCCCCTGCGGCTGAGCGGCAAACCCCTGCTGCTGACCGAGCTTTTTTTGCCT
TITLE OF INVENTION: PNEUMONIAE FOR DIAGNOSTICS AND THERAPEUTICS FILE REFERENCE: 2709.2004001
CURRENT APPLICATION NUMBER: US/09/489,039A
CURRENT FILING DATE: 2000-01-27
PRIOR APPLICATION NUMBER: US 60/117,747
PRIOR APPLICATION NUMBER: 1999-01-29
NUMBER OF SEQ ID NOS: 14342
LENGTH::645
                                                                                                                                                                                                                                                  645
129
16
20
0
                                                                                                                                                                                                                                                                  Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                        US-10-718-311-4 (1-165) x US-09-489-039A-1234 (1-645)
                                                                                                                                                        TYPE: DNA
ORGANISM: Klebsiella pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    4.54e-75
673.00
87.9%
78.2%
78.8%
                                                                                                                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                            US-09-489-039A-1234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 8
US-09-543-681A-3122
                                                                                                                                                                                                                                Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   141
                                                                                                                                                                                                                                                                                                 Best Local S
Query Match:
```

셤 ò

õ 셤 ò g ઠે 요 ò 셤 ò 셤 ઠે g ò 셤 ð 셤 ဖ

```
||| ::: ||| :::||| ||| 16884 GCACACTCAAAAAGGTTGAATCAGCCACTCACC 16943
                                                                                                                                                                                      95 ValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrPro 114
                                                                                                                                                                                                                                                                                                                                                                                                  64 CTGCCTCCAAAACTTGCGATTTTGTATTTACTCAAGGGTCGTTAACGGCACGATTAGAA 123
                                                                                                 124 GCACACTCAAAAAACCCCTAAAGGTTGAAATCATCCATCAAGGCTATCAGCCACTCACC 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      115 LeuGlyArgTyrLeuPheThrSerSer-----ThrLeuThrArgAspPheIleGlu 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          132 IleGlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysPro 151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Lagace, Robert, B.
APPLICANT: Patterson, Chandra
APPLICANT: Berg, Kim, L.
TITLE OF INVENTION: NUCLEOTIDE SEQUENCES OF MORAXELLA CATARRHALIS GENOME
FILE REFERENCE: PM-0008-4 US
CURRENT APPLICATION NUMBER: US/09/596,002
CURRENT FILING DATE: 2000-06-16
PRIOR APPLICATION NUMBER: 60/140,121
PRIOR PILING DATE: 1999-06-18
NUMBER OF SEQ IN NOS: 41
                                                                                                                                                                                                                                                            94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       54
                                                                                                                                                                                                                                                            TrpLeuArgGlulleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     21 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerWetThrLysArgPheGlu
                                                                                                                                                     55 PheValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    355 ATCGGATATGTTTTGTTCAAAAAGGCAACAACTGCCAATTAAGCGTCATTTTAT---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       41 GlnGlnGly---LysThrValSerValThrMetIleArgGluGly----LysThrValSerValThrMetIleArgGluGly------
                                                41 GlnGlnGly---LysThrValSerValThrMetIleArgGluGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NAME/KEY: misc feature
OTHER INFORMATION: Incyte template ID No. 6632636 41
PUBLICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            946
334
115
6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-718-311-4 (1-165) x US-09-596-002-41 (1-269223)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 152 LeuLeuLeuThrGluLeuPheLeuProAla 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               466 ATCTTGATTGATGAGCTATTTTTGGCAGCT 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 41, Application US/09596002; Patent No. 6632636; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA OKGANISM: Moraxella catarrhalis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           6.29e-08
171.50
53.3*
30.7*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE: PE
SEQ ID NO 41
LENGTH: 269223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-596-002-41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-596-002-41
                                                                                                                                                                                                                                                            75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE:
                                                                                            g
                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                  ò
                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
APPLICANT: Gary L. Breton et al.
APPLICANT: Gary L. Breton et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO MORAXELLA CATAR
TITLE OF INVENTION: FOR DIAGNOSTICS AND THERAPEUTICS
PILE REFERENCE: 2709.2005-001
CURRENT APPLICATION NUMBER: US/09/540,236
CURRENT FILING DATE: 2000-04-04
NUMBER OF SEQ ID NOS: 3840
SEQ ID NO 1889
                                                                                                       127 CAACTGTCAAGCGTCTCCCCCGCCGTCCTCGACTGGTTCGACGAGGGGTCGCTGACC 186
                                                                                                                                                                                                              280 GACGTCCTACCGGCAGTAGCGGCTGGGTCCGCGAGGTCTACCTGCATGGCCACGACCGT 339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |||| || ||||||::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ProTrpLeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGluLeuAla 106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  340 cccricionerroscociciones de constantes de contra de 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPheThrSerSerThrLeuThr 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      crescerecrededeaccescrescrescrescrescrescrescencises 459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----GlyArgAsp 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               136 AlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThr 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GAGGGTCTCTGGGGCCGTCGCTCACGGTTTTCCCGCGGCGCCCTCGGGGTGCTGGTGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -----ProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu 40
                                                                                                                                                                                                                                                                                                                                                                                            -----ProLysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAspGlyGlu
                                                                         17 GluileProAlaLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThr
                                                                                                                                                                                LysArgPheGluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheVal
                                                                                                                                                                                                                                                                                                                                        220 CGCGTCGAACCCCTGCTGGAAGGCTGGCAGACCCTGCGCGACGACGAATGCCAGGGGCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            519
448
36
57
29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                     57 GluGlnAsnGluIleProGluGluLeuProLeuLeu---
                        US-10-718-311-4 (1-165) x US-09-252-991A-7442 (1-630)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-718-311-4 (1-165) x US-09-540-236-1889 (1-519)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ArgAspPheIleGluIle------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CystysGluileProAlaLeuAsp----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 1889, Application US/09540236 Patent No. 6673910
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.75e-12
174.50
49.4%
28.2%
20.4%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA
ORGANISM: M.catarrhalis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 10
US-09-540-236-1889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; ORGANISM: M.Ca
US-09-540-236-1889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 519
                                                                                                                                                                              37
                                                                                                                                                                                                                                                                                                                                                                                            69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  520
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score:
                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                               d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                          셤
                                                                                                                                                                              ઠે
                                                                                                                                                                                                                            qq
                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
```

```
RESULT 13
US-09-25-991A-7361
US-09-25-991A-7361

Sequence 7361, Application US/09252991A
Fatent No. 6551795
GENERAL INFORMATION:
TITLE OF INVENTION: MUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: DARUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION: MUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
FILE OF INVENTION: DARIGINOSA FOR DIAGNOSTICS AND THERAPEUTICS
CURRENT FILING DATE: 1999-02-18
FRIOR PPLICATION NUMBER: US 60/074,788
FRIOR PLING DATE: 1998-02-18
FRIOR PLING DATE: 1998-02-18
FRIOR PLING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 14
US-09-543-681A-3086/c
US-09-543-681A-3086/c
; Sequence 3086, Application US/09543681A
; Patent No. 6605709
; GENRRAL INFORMATION:
; AFPLICANT: GARY BRETON
; TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PROTEUS MIRABIT
; TITLE OF INVENTION: DIAGNOSTICS AND THERAPEUTICS
; FILE REFERENCE: 2709.1002-001
                  ProLeuGlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGly 133
                                                                  134 ArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeu 153
                                                                                        415 TTACCAGAAGGC---1GGACGCGACAAAGTTGTTATACTTGGCATGGATGTAAATTTATT 471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |||||||
| CTGGGCGAGTTGCTGTTCAGCGACAGCGCCTTCGAGCGCGGGCCCATCGAGGTCTGCCGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      95 ValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrPro 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ----GlyArgAspAlaGlyLeuTrpGlyArgArgSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              185 TATCCGGCGGCCGGTCTGCCCGCCGAGGTCCGCGCGAGGGTCTCTGGGGCCGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TrpLeuArgGlulleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rederecededadereracerecareceaceaceacereceredererrececededere
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LeuGlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIle---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  144 ArgleuArgleuSerGlyLysProLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1248
35
10
41
11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-4 (1-165) x US-09-252-991A-7361 (1-1248)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
Matches:
                                                                                                                                                                      472 GTTCAAGAACATTCTTACCGGCT 495
                                                                                                                                   154 LeuThrGluLeuPheLeuProAla 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     , ORGANISM: Pseudomonas aeruginosa
US-09-252-991A-7361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.26e-08
146.50
46.4%
36.1%
17.2%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ..
9
                                                                                                 g
                         g
                                                                                                                                   ò
                                                                                                                                                                  셤
                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TO ACINETOBACTER
                                                                                                                 17054
                                                                                                                                                                    114
                                                                                                                                                                                                                    115 LeuGlyArgTyrLeuPheThrSerSer-----ThrLeuThrArgAspPheIleGlu 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ||||:::
| AAGCAGGAAAAGACTTTAAATCCTGAATTGAAAACATGGTTGTATGCGTCTGGTTCTCTG 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ValValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThr 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      74
                                                                                 94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACACAACAACTCACTGAGCTGGGTGGGAAGTTCAGCGTAAAGCCTTTCAAAGAACAT 174
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PhevalGluGlnAsnGluIleProGluGluLeuProLeuLeuProLygClysGluSerArgTyr 74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LysGluIleProAlaLeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMet 35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ThrLysArgPhe---GluGlnGlnGlyLysThrValSerValThrMetIleArgGluGly 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TrpLeuArgGlulleLeuLeuCys---AlaAspGlyGluProTrpLeuAlaGlyArgThr 93
                                16995 TGGGTACGCAGTGTCAAGTTATACGGTGATGCGGACGCTTGGGTGCTTGCCAAAAGTATT
                                                                                                                                                ValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrPro
                                                                                                                                                                                                                                                                                       132 IleGlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysPro
          PheValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyr
                                                                               TrpLeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ||||
TTCCAGCGTTTAACTTTTGCCGACAGTCAATGGATGAACATGCCCCCATACTCACATCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGGGTGAGGGAAACCTATTTATATGGCAGTGATGTAGAGCCTTGGGTGAAAGCAAAAGT
                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-328-343

US-09-328-343

Sequence 343, Application US/09328352

Patent No. 656258

GENERAL INFORMATION:

TITLE OF INVENTION: BAUMANNI FOR DIAGNOSTICS AND THERAPEUTICS

TITLE OF INVENTION: BAUMANNI FOR DIAGNOSTICS AND THERAPEUTICS

CURRENT APPLICATION NUMBER: US/09/328,352

CURRENT FILING DATE: 1999-06-04

NUMBER OF SEQ ID NOS: 8252

LENGTH: 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0 4 4 7 C E E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-718-311-4 (1-165) x US-09-328-352-343 (1-540)
                                                                                                                                                                                                                                                                                                                                                                                17226 ATCTTGATTGATGAGCTATTTTTGGCAGCT 17255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                            152 LeuLeuThrGluLeuPheLeuProAla 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; ORGANISM: Acinetobacter baumannii
US-09-328-352-343
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2.57e-10
157.50
45.9%
29.7%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Alignment Scores:
Pred. No.:
Score:
                                                                               75
                                                                                                                                                   95
            22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     295
                                         셤
                                                                             ઠે
                                                                                                      셤
                                                                                                                                              ઠે
                                                                                                                                                                         요
                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                          쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             è
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
```

```
CITCICCICITIGACCICCGGGGGGGGGGCTITICCCGICACGGGCGGGCCCTCGCC 1206
                                                                                                                                                                                                                                                                                                                      IleGlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysPro 151
                                                                                                                                                                                                                                                                                                                                         --LeuArgTyrCysLysGlu 17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----Ser 34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MetThrLygArgPheGluGlnGlnGlyLysThrValSerValThrMetIleArgGluGly 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:

APPLICANT: MCHENTY, Charles

APPLICANT: MCHENTY, Charles

TITLE OF INVENTION: NOVEL THERMOPHILIC POLYMERASE III HOLOENZYME

FILE REFERENCE: 1794-0030004

CURRENT APPLICATION NUMBER: US/09/818,780

CURRENT FILING DATE: 2001-03-28

PRIOR APPLICATION NUMBER: US 60/192,736

PRIOR APPLICATION NUMBER: US 60/192,736

PRIOR PILING DATE: 2000-03-28

NUMBER OF SEQ ID NOS: 98

SOFTWARE: Parentin version 3.0

SEQ ID NO 75

LENGTH: 2127
                                                                                                                                                                                                                                                                                                                                                                                 152 LeuLeuLeuThrGluLeuPheLeuProAlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                    131 TTATTAACTGAGGTGTTTTTGCCTGCATCACCTGTATAT 90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2127
59
22
77
94
                                                                                                                                                                                 195
24
4
6
0
                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                         US-10-718-311-4 (1-165) x US-09-543-681A-3086 (1-195)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-718-311-4 (1-165) x US-09-818-780-75 (1-2127)
CURRENT APPLICATION NUMBER: US/09/543,681A CURRENT FILING DATE: 2000-04-05 PRIOR APPLICATION NUMBER: US 60/128,706 PRIOR FILING DATE: 1999-04-09 NUMBER OF SEQ ID NOS: 8344 ELENGTH: 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4 ProAlaLeuThrGlnLeuArgAla--
                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 15
US-09-818-780-75
Sequence 75, Application US/09818780
Patent No. 6677146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM: Thermus thermophilus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LeuLeuLeuGluAsp---
                                                                                                                                                                               2.1e-06
121.00
82.4%
70.6%
                                                                                                                      ORGANISM: Proteus mirabilis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0.661
90.00
32.1%
23.4%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
                                                                                                                           ; ORGANISM: Frocev
US-09-543-681A-3086
                                                                                                                                                                   Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
Pred. No.:
Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; ORGANISM: Th
US-09-818-780-75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1147
                                                                                                                                                                                                                                                                                                                        132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          35
                                                                                                          TYPE: DNA
                                                                                                                                                                                                                                             Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
```

```
1567 GIGGGGACCACGCCCTCCTCAGGGGCCTAGGCTTCCCGACCTCGCCCTCGTCCTCCTC 1626
1267 TACAGCGCCCTCCTCCTCTGCCAGGACTGCGGCTTCCGGCCCATGTGCCCCGACTGCGCC 1326
                                                                                                                       1327 TTGCCCCTGCGGTACCACCGGGAGGGGGAGGGGCGCTCGTCTGCCACCACCAGGGCGCCAC 1386
                                                                                                                                                                                                                                     ||||:::|||||| |||
1447 CCCGGGTGGACTGGATCCGGGAGGGCCTGGCGGAGGGCTTTCCCTTCCCGTCTACCGC 1506
                                                                                                                                                                                                                                                                                                               1627 CCTTTGGCG-----GACGGCTTCCTCCTGGAGTCGGACTTCCGGGCGGCGGAG 1674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ValSerThr------LeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThr 113
                                                                                                                                                        7
                                                                                                                                                                                                                                                                                81 LeuCysAlaAspGlyGlu------ProTrpLeuAlaGlyArgThrValValPro
                                                                                                                                                                                                                   72 SerArgTyr---TrpLeuArgGluIleLeu----------------
                                                                                                                                                                                                                                                                                                                                                                                                            114 ProleuGlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGly
                                                                                          ---ValGluGlnAsnGluIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         134 ArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GICCTCCAGACCTICACCCCCGAGCACCCCGTGCAC 1770
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     154 LeuThrGluLeuPheLeuProAlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Search completed: May 29, 2006, 12:27:47 Job time : 238.955 secs
                                                                                                                                                        62 ProGluGluLeuProLeuLeu-
                               55 Phe----
                                                                                                                                                                                                                                                                                                                                                6
                                                                                                                                                                             g
                                                                                                                                                                                                                                          음 장
                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                     à
                                                    g
                                                                                 à
                                                                                                                 셤
                                                                                                                                              ∂
                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                  à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
```

Run on:

```
Sequence 3, Appli
Sequence 7, Appli
Sequence 16, Appli
Sequence 11, Appli
Sequence 13, Appli
Sequence 31, Appli
Sequence 47, Appli
Sequence 11, Appli
Sequence 11, Appli
Sequence 113, Appli
Sequence 113, Appli
Sequence 113, Appli
Sequence 115, Appli
Sequence 111, Appli
Sequence 111, Appli
Sequence 325, Appli
Sequence 31285, Appli
Sequence 772942,
Sequence 772942,
Sequence 772942,
Sequence 289318,
Sequence 289318,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 200733,
Sequence 200730,
Sequence 1721, Ap
Sequence 11402, A
Sequence 200729,
Sequence 200729,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 289317,
Sequence 902726,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 3, Application US/09855341
| Patent No. US2002002715A1
| Patent No. US20020002715A1
| Patent No. US20020002715A1
| APPLICANT: WITAMEN, PAUL V.
| APPLICANT: WAN DYK, DAEW
| TITLE OF INVENTION: IN GREEN PLANTS
| TITLE OF INVENTION: IN GREEN PLANTS
| TITLE OF INVENTION: US NA
| CURRENT APPLICATION NUMBER: US/09/855,341
| CURRENT FILING DATE: 2001-05-15
| NUMBER OF SEQ ID NOS: 16
| SEQ ID NO 3
| LENGTH: 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OTHER INFORMATION: Description of Unknown Organism: E. coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      495
3 US-09-896-866B-12

17 US-10-359-366-37

18 US-10-69-350-12

19 US-10-462-162-29

19 US-10-462-162-29

19 US-10-462-162-29

19 US-10-855-341-7

19 US-10-359-366-11

10 US-10-359-366-11

10 US-10-462-162-33

10 US-10-462-162-34

10 US-10-462-162-34

10 US-10-450-763-26139

10 US-10-462-162-74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10 672-396-4
US-09-925-065A-772942
US-09-925-065A-772942
US-11-097-143-18275
US-10-322-2811-362
US-10-301-480-99318
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-087-192-1315
6 US-11-183-136-15
0 US-10-467-67-285-2
0 US-10-487-078-92
0 US-10-461-862-101
0 US-10-750-182-33285
0 US-10-750-182-33285
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-915-740A-1068
US-10-330-773-925
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-301-480-289317
US-10-301-480-902726
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 110
6 110
6 110 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1.91e-102
                                                                                                                                                                                                          1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
10000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1
       TYPE: DNA
ORGANISM: Unknown Organism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 1
US-09-855-341-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-09-855-341-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          883.55
833.55
833.55
833.55
833
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 82.5
82.5
82
82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Published Applications NA Main:*

1. /EMC_Celerra_SIDS3/ptodata/2/pubpna/US07_PUBCOMB.seq:*
2. /EMC_Celerra_SIDS3/ptodata/2/pubpna/US08_PUBCOMB.seq:*
3: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US09_PUBCOMB.seq:*
4: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US09_PUBCOMB.seq:*
5: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US09_PUBCOMB.seq:*
6: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US10_PUBCOMB.seq:*
7: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US10_PUBCOMB.seq:*
8: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US10_PUBCOMB.seq:*
9: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US10_PUBCOMB.seq:*
10: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US10_PUBCOMB.seq:*
11: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US10_PUBCOMB.seq:*
12: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US10_PUBCOMB.seq:*
13: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US10_PUBCOMB.seq:*
14: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US10_PUBCOMB.seq:*
14: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US11B_PUBCOMB.seq:*
15: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US11B_PUBCOMB.seq:*
16: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US11B_PUBCOMB.seq:*
16: /EMC_Celerra_SIDS3/ptodata/2/pubpna/US11B_PUBCOMB.seq:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      May 30, 2006, 03:03:17 ; Search time 1135.79 Seconds (without alignments) 2677.596 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 3, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -USER=US10718311 @CGN 1 1 2326 @runat 26052006 164933 13735 -NCPU=6 -ICPU=3 -NO MMAP -NEG SCÖRES=6 "WAIT "DSPBLOCK=100 -LONGLOG "DBV TIMEOUT=120 -WARN TIMEOUT=30 -THREADS=1 -XGAPOP=10 -XGAPOF=10 -YGAPOF=10 -YG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MSHPALTQLRALRYCKEIPA......RLSGKPLLLTELFLPASPLY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      37784340
                                       GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd
                                                                                                                                                                       nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               18892170 segs, 6143817638 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  495 3 US-09-855-341-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BLOSUM62
Xgapop 10.0 , Xgapext
Ygapop 10.0 , Ygapext
Fgapop 6.0 , Fgapext
Delop 6.0 , Delext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query
Score Match Length DB
                                                                                                                                                                                                                                                                                                                                                                      US-10-718-311-4
854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              854 100.0
                                                                                                                                                                                                                                                                                                                                                                          Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Scoring table:
                                                                                                                                                                       OM protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Searched:
```

No. Result

854.00 Matches:	DB: 3 Gaps: 0
Feffent Similarity: 100.0% COMBETVATIVE: 0 Best Local Similarity: 100.0% Mismatches: 0 Distry March: 100.0% Triels: 0	US-10-718-311-4 (1-165) x US-09-896-866B-12 (1-495)
Gaps:	Qy 1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla 20
US-10-718-311-4 (1-165) x US-09-855-341-3 (1-495)	Db 1 ATGTCACACCCGGGTTAACGCAACTGCGTGCGCTGCGCT
Oy 1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla 20	Qy 21 LeukapProGlnLeuleukapTrpLeuLeuLeuGlukapSerMetThrLygkrgPheGlu 40
Oy 21 LeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGlu 40	Qy 41 GlnGlnGlyLysThrValSerValThrMetileArgGluGlyPheValGluGlnAsnGlu 60
Qy 41 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnasnGlu 60 bb 121 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 180	Qy 61 IleProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu 80
Oy 61 IleProGluGluLeuBroLeuBroLysGluSerArgTyrTrpLeuArgGlulleLeu 80 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Qy 81 LeucysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
Qy 81 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100 Db 241 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTTCCTGTGTCAACGTTA 300	Qy 101 SerGlyProGluLeualaLeudlniysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
Oy 101 SerGlyProGluLeualaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120	Qy 121 ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 140
Oy 121 ThrserSerThrLeuThrargAspPheileGluileGlyargAspAlaGlyLeuTrpGly 140	Qy 141 ArgArgSerArgLeuArgLeuSerGlyLy8ProLeuLeuThrGluLeuPheLeuPro 160
Qy 141 ArgArgSerArgLeuArgLeuSerGlyLySProLeuLeuThrGluLeuPheLeuPro 160 Db 421 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTTGCTAACAGAACTGTTTTACCG 480	Qy 161 AlaSerProLeuTyr 165
Qy 161 AlaSerProLeuTyr 165 Db 481 GCGTCACCGTTGTAC 495	RESULT 3 US-10-359-369-37 ; Sequence 37, Application US/10359369
RESULT 2 US-09-896-866B-12 US-09-896-866B-12 Sequence 12, Application US/09896866B Sequence 12, Application US/09896866B Facent No. US2020151002A1 GENERAL INFORMATION: APPLICANT: Flint, Dennis APPLICANT: Vittanen, Paul TITLE OF INVENTION: Benzoic Acid Glucosides TITLE OF INVENTION: Box and Acid Glucosides TITLE OF INVENTION: UNBER: US/09/896,866B CURRENT APPLICATION NUMBER: 60/216,615 PRIOR APPLICATION NUMBER: 60/216,615 PRIOR APPLICATION NUMBER: 60/216,615 FRIOR FILING DATE: 2000-07-07 NUMBER OF SEQ ID NOS: 19 SOFTWARE: Microsoft Office 97 SEQ ID NO 12 LENGTH: 495 TYPE: DNA CORGANISM: Becherichia coli US-09-896-866B-12	## Publication No. U82030215927A1 Publication No. U8203030215927A1 APPLICANT: B. I. duPont de Nemours and Company, Inc. APPLICANT: Wayer, Mut APPLICANT: Wayer, Mut APPLICANT: Wayer, Mut APPLICANT: Wan Dyk, Drew TITLE OF INVENTION: UDP-Glucosyltransferases TITLE OF INVENTION: UDP-Glucosyltransferases PILE REFERENCE: CL1821 US N. O.
Alignment Scores: 1.91e-102 Length: 495 Pred. No.: 854.00 Matches: 165 Percent Similarity: 100.0\$ Conservative: 0 Percent Similarity: 100.0\$ Mismatches: 0 Query Match: 100.0\$ Indels: 0	Alignment Scores: Pred. No.: Pred. No.: Score: Score: Score: Bercent Similarity: Decrent Similarity: Decrent Similarity: Decrent Similarity: Do.0% Mismatches: Ouery Match: 7 Gaps:

```
101 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                             301 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTTATCTGTTC 360
                                                                                                                                                                                                                                                                                                                                                                          ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                                                                                                                                                          141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                       421 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG 480
                                                                                 20
                                                                LeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGlu 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla 20
                      MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OF P-HYDROXYBENZOIC ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   495
000
000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; FEATURE:
; OTHER INFORMATION: Description of Unknown Organism:E.
US-10-718-311-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-718-311-4 (1-165) x US-10-718-311-3 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 3, Application US/10718311
| Publication No. US20040143867A1
| GENERAL INFORMATION:
| APPLICANT: VIITANEN, PAUL V.
| APPLICANT: WAN DYK, DREW
| TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF TITLE OF INVENTION: IN GREEN PLANTS
| FILE REPERENCE: BC1015 US NA. |
| CURRENT APPLICATION NUMBER: US/10/718,311 CURRENT FILING DATE: 2003-11-20
| PRIOR FULING DATE: 2001-05-15 |
| NUMBER OF SEQ ID NOS: 16
| SOFTWARE: MICROSOFT OFFICE 97 |
| SEQ ID NO 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   161 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      481 GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.91e-102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA
ORGANISM: Unknown Organism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 5
US-10-718-311-3
                                                              21
                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score:
                         염 . 상
                                                                                   셤
                                                                                                                                              ద
                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                    g
   8
                                                                                                                 8
                                                                                                                                                                                  ò
                                                                                                                                                                                                                                               δ
                                                                                                                                                                                                                                                                                                  õ
                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                              ద
                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                              a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NESCUT.

Sequence 12, Application US/10699050

Sequence 12, Application US/10699050

Publication No. US20040142437A1

GENERAL INFORMATION:

APPLICANT: Filint, Dennis

APPLICANT: Meyer, Knut

APPLICANT: Meyer, Knut

APPLICANT: Meyer, Knut

TITLE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugates

TITLE OF INVENTION NUMBER: US/10/699,050

CURRENT FILING DATE: 2003-10-30

PRIOR FILING DATE: 2003-6-29

PRIOR FILING DATE: 2000-07-07

NUMBER OF SEQ ID NOS: 19

SOFTWARE: Microsoft Office 97

SEQ ID NO 12

LENGTH: 495
                                                                                                                                                                                                                                                                            LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSsrThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                                  ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                           61 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 120
                                                                                                                                                                                   180
                                                                                                                                                                                                                                                240
                                                                                                                                                                                                                                                                                             ArgargSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                       301 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG 480
                                                              9
                                                                                        21 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu 40
                                                                                                                                                      9
                                                                                                                                                                                                                  80
                            MetSerhisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                     GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                        IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                               181 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 495
000
000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
US-10-718-311-4 (1-165) x US-10-359-369-37 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-718-311-4 (1-165) x US-10-699-050-12 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1.91e-102
854.00
100.0%
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; TYPE: DNA
; ORGANISM: Escherichia coli
US-10-699-050-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                         101
                                                                                                                                                     41
                                                                                                                                                                                                                                                                            81
                                                                                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match:
DB:
                                                        a
                                                                                 ò
                                                                                                                 g
                                                                                                                                                   ò
                                                                                                                                                                           셤
                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                          õ
                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                               임
                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         원
```

420

480

120 300

240 100

80

```
301 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAGCAGGAAAAACGGTAAGCGTGACGATGGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 366
                                                                                                   181 Arcccceaagaacreccecrecrecceaaagaercreerracreerracereaaarrrre
                                                                                                                                LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                              241 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                         SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                    ThrSerSerThrLeuThrArgAspPhe11eGlu11eGlyArgAspAlaGlyEeuTrpGly
                                                                                                                                                                                                                                                                    361 ACATCATCGACATTAACCCGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                              141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                             21 LeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GlnGlnGlyLygThrValSerValThrMetIleArgGluGlyPheValGluGlnAgnGlu
               GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 7, Application US/0985341
; Sequence 7, Application US/0985341
; Patent No. US2002002715A1
; GARERAL INFORMATION:
    APPLICANT: UNFORMATION:
    APPLICANT: WAND DYK, DREW
; TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID
; TITLE OF INVENTION: IN GREEN PLANTS
; FILE REPERBNCE: EC1015 US NA
; CURRENT APPLICATION NUMBER: US/09/855,341
; CURRENT FILING DATE: 2001-05-15
; NUMBER OF SEQ ID NOS: 16
; SEQ ID NO 7
; SEQ ID NO 7
; LENGTH: 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             OTHER INFORMATION: Description of Artificial Sequence: synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       684
00
00
00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-718-311-4 (1-165) x US-09-855-341-7 (1-684)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA ORGANISM: Artificial Sequence FEATURE:
                                                                                                                                                                                                                                                                                                                                                                       161 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                     481 GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3e-102
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  , OTHER INFORM
US-09-855-341-7
                                                                         61
                                                                                                                                  81
                                                                                                                                                                                           101
                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No.:
                                                                                                ద
                                                                                                                                                      g
                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                   g
                                                              à
                                                                                                                       8
                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                     유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Arbutin in Green Plants and Microbes
                                                                                                                                                                                                                                                                                                                                       CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAACGTTTTGAA 120
                                                                                                                      LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValDroValSerThrLeu 100
                                                                                                                                                                                                                                       THATGECCGATGGTGAACCGTGGCTTGCCGGTCGTACCTTCCTGTCTTGTAGTGCAACGTTA 300
                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                  ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                  421 CGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAACAGAACTGTTTTTAACG 480
                                                                                                                                                                                                                                                                                                            AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CIGGAICCGCAACIGCICGACIGGCIGIIGCIGGAGGAIICCAIGACAAAACGIIIIGAA 120
                                                                                                   GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu 60
                                                                                                                                                               80
                                            40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        40
                                          LeukapproGinLeuLeukapTrpLeuLeuGlukapSerMetThrLyskrgPheGlu
                                                                                                                                                            IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                   181 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                               SerGlyProGluLeuAlaLeuGlnLy8LeuGlyLy8ThrProLeuGlyArgTyrLeuPhe
MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               498
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 6
US-10-462-162-29
i Sequence 29, Application US/10462162
j Publication No. US20040261147A1
general INFORMATION:
APPLICANT: B.I. duPont de Nemours and Company, Inc.
APPLICANT: Vitanen, Paul
APPLICANT: Vitanen, Paul
TILE OF INVENTION: High Level Production of Arbutin i;
FILE REFERENCE: CL 2155 US NA
CURRENT FILING DATE: 2003-06-16
CURRENT FILING DATE: 2003-06-16
NUMBER OF SEQ ID NOS: 54
SOFTWARE: Microsoft Office 97
FENET APPLICATION NOS: 54
SEQ ID NOS: 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-718-311-4 (1-165) x US-10-462-162-29 (1-498)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1,93e-102
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        481 ĠĊĠŢĊĄĊĊĠŢŢĠŢĄĊ 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                             AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: Escherichia coli
US-10-462-162-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
Pred. No.:
Score:
                                                                        19
                                                                                                     41
                                                                                                                                                              61
                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                            301
                                                                                                                                                                                                                                                                                                                                                                                                    141
                                                                                                                                                                                                                                                                                                                                                                                                                                                           161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          21
                                          21
                                                                                                                                                                                                                      81
                                                                                                                                                                                                                                                                                 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                            ద
                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                g
                                                                                                  8
                                                                                                                       g
                                                                                                                                                ठ
                                                                                                                                                                                   g
                                                                                                                                                                                                          ે
                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                   중 음
                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                       ò
```

306

60

40

	0y 81 LeuCysAlaAspGluGluEeuProLysGluSerArgTyTTpLeuArgGluIleLeu 80 367 ATCCCGGAAGAACTGCCGCTGCCGAAGAACTCGTTACGTGAAATTTTG 426 0y 81 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSeTThrLeu 100 0b 427 TTATGTGCGATGGTGAACTGCGGTTGCCGGTTGCTGTGTCAACGTTA 486 0y 101 SerGlyProGluEeuAlaLeuGlnLysEthrProLeuGlyArgTyrLeuPhe 120 0b 487 AGCGGGCGGAGCTGGCGTTACAAAATTGGGTAAAACGCGTTAGGAGCTTTTGTTC 546 0y 121 ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly 140 0b 547 ACATCATCGACGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTTTTGTTC 546 0y 141 ArgArgSerArgLeuArgLeuSerGlyLyBProLeuLeuLeuThrGluLeuPheleuPro 160 0y 141 ArgArgSerArgLeuArgLeuSerGlyLyBProLeuLeuThrGluLeuPheleuPro 160 0y 161 AlaSerProCecTGCGTTAAGCGGTAAACGCCGTTAGGAGCTTTTTACCG 666 0y 161 AlaSerProLeuTyr 165 0b 667 GCGTCACCGTTGATAACCGCTTTTTACCG 666
RESULT 8 US-09-896-8668-16 US-09-896-8668-16 Sequence 16, Application US/0989686B Patent No. US20020151002A1 GENERAL INFORMATION: APPLICANT: Plint, Dennis APPLICANT: Wayer, Knut CURRENT APPLICANTON: Second Glucosides FILE REFERENCE: 2001-06-29 FRIOR APPLICATION NUMBER: 60/216,615 NUMBER OF SEQ ID NO: 16 SEQ ID NO: 16 LENGTH: 684 TYPE: DNA ORGANISM: Artificial Sequence FRATURE: NAME/KEY: Misc feature OTHER INFORMATION: open reading frame of the chloroplast-targeted CPL fusion protein US-09-896-866B-16	US-10-159-369-41 Sequence 41, Application US/10359369 Sequence 41, Application US/10359369 Sequence 41, Application No. US20030215927A1 SEQUENCE 41, INFORMATION: APPLICANT: Vitanen, Paul APPLICANT: Wiltenen, Paul APPLICANT: Wiltenen APPLICANT: Vitanen APPLICANT: Wiltenen
Alignment Scores: Pred. No.: Bred. No.: Score: Score: Bost.100 Matches: 165 Score: 100.0\$ Mismatches: 0 Description: 100.0\$ Mismatches: 0 Description: 100.0\$ Mismatches: 0 Description: 100.0\$ Mismatches: 0 Gaps: 0 Caps: 0 Indels: 0 Gaps: 0 Gaps: 0 Caps:	Alignment Scores: Alignment Scores: Pred. No.: Score: Score: 100.0\$ Matches: 165 Percent Similarity: 100.0\$ Mismatches: Ouery Match: 100.0\$ Mismatches: 100.0\$ Mismatches: 100.0\$ Mismatches: Ouery Match: 100.0\$ Indels: 0 Canservative: 0 Cans

```
100
                                                                                                                                                   546
                                                                                                                                                                                                                                           160
                                                                                                                                                                                                                                                                        999
                             426
                                                                                       486
                                                                                                                     120
                                                                                                                                                                                 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                           141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                          CGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                    ATCCCCGAAGAACTGCCGCTGCTGCTGAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                          TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                       SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                   487 AGCGGGCCGGAGCTGGCTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                  547 ACATCATGGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
    IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; OTHER INFORMATION: Description of Artificial Sequence:synthetic CPL US-10-718-311-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRODUCTION OF P-HYDROXYBENZOIC ACID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            684
0 0 0
0 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-718-311-4 (1-165) x US-10-718-311-7 (1-684)
                                                                                                                                                                                                                                                                                                                                                                                   SUBJECT OF APPLICATION US/10718311
FUBLICATION NO. US20040143867A1
GENERAL INFORMATION:
APPLICANT: VIITANEN, PAUL V.
APPLICANT: VIITANEN, PAUL V.
APPLICANT: VIITANEN, RWUT
TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF TITLE OF INVENTION: HIGH LEVEL PANTS
FILE REFERENCE: BC1015 US NA
CURRENT APPLICATION NUMBER: US/10/718,311
CURRENT FILING DATE: 2001-05-15
NUMBER OF SEQ ID NOS: 16
SOFTWARE: MICROSOFT OFFICE 97
SEQ ID NO 7
LENGTH: 684
                                                                                                                                                                                                                                                                                                      161 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                      GCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3e-102
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
Pred. No.:
                                                             81
                                                                                         427
                                                                                                                        101
                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                        607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                  ò
                                                                                   g
                                                                                                                                             g
                                                                                                                                                                       ò
                                                                                                                                                                                                           원
                                                                                                                                                                                                                                                                 셤
                     요
                                                                                                                       ò
                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                     8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             용
                                                                                                                                                                                                                                                                                                                                                                  Sequence 16, Application US/10699050
; Publication No. US20040142437A1
; GENERAL INFORMATION:
    APPLICANT: Flint, Dennis
; APPLICANT: Weyer, Knut
; APPLICANT: Witanen, Paul
; TITLE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugates
; TITLE OF INVENTION: Benzoic Acid Glucosides
; TITLE OF INVENTION: Benzoic Acid Glucosides
; TITLE OF INVENTION: US/09/896,866B
; FILE REFERENCE: BC1034 US NA
; CURRENT APPLICATION NUMBER: US/09/896,866B
; PRIOR APPLICATION NUMBER: US/09/896,866B
; PRIOR PPLING DATE: 2001-06-29
; PRIOR FILING DATE: 2001-06-29
; PRIOR FILING DATE: 2000-07-07
; NUMBER OF SEQ ID NOS: 19
; SEQ ID NO 16
; LENGTH: 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                , NAME/KEY: misc feature
, OTHER INFORMATION: open reading frame of the chloroplast-targeted CPL fusion protein
US-10-699-050-16
                                                                                                     ThrSerSerThrLeuThrArgAapPhelleGlulleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                           LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                                             909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          247 cragarccacaacracrcaacracracracracaacaarrccaraaaacarrraaa 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21 LeuAspProGlnLeuLeuLeuLeuLeuLeuGluAspSerMetThrLysArgPheGlu 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GlnGlnGlyLyBThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu 60
                                                                                                                                                                                         547 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGGG
MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          684
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-4 (1-165) x US-10-699-050-16 (1-684)
                                                                                                                                                                                                                                                                                     161 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE: DNA
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                   667 GCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3e-102
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Percent Similarity:
                                                                                                                                                                                                                                                                                                                                               RESULT 10
US-10-699-050-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores
                                           81
                                                                           427
                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 41
                                                                                                                                                                                                                                                 셤
                                           ò
                                                                   g
                                                                                                     ઠે
                                                                                                                           g
                                                                                                                                                      ò
                                                                                                                                                                                         임
                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
```

```
OTHER INFORMATION: Nucleotide sequence of nucleic acid fragment encoding CPL (from OTHER INFORMATION: Escherichia coll), pHBA 1-hydroxylase (from Candida CPL (From US-10-462-162-47)
                                                                                                                                                                                                    Sequence 47, Application US/10462162

Publication No. US20040261147A1

GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: E.I. duPont de Nemours and Company, Inc.
APPLICANT: Meyer, Knut
APPLICANT: Plint, Dennis
APPLICANT: Plint, Dennis
TITLE OF INVENTION: High Level Production of Arbutin in Green Plants and Microbes
TITLE OF INVENTION: High Level Production of Arbutin in Green Plants and Microbes
CURRENT FILING DATE: 2003-06-16
NUMBER OF SEQ ID NOS: 54
SSOTHARE: MICROSOFT Office 97
SSO ID NO 47
LENGTH: 3452
                                             183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      63
 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCyaLysGlu1leProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GlnGlnGlyLygThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3452
165
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-718-311-4 (1-165) x US-10-462-162-47 (1-3452)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2.83e-101
854.00
100.0%
100.0%
                                                                                                                                        161 AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                     TYPE: DNA
ORGANISM: artificial sequence
FEATURE:
                                                                                                                                                             667 GCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                    RESULT 13
US-10-462-162-47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
                                                                   547
                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No.:
                   g
                                                                                                              g
                                               ò
                                                              ద
                                                                                   8
                                                                                                                                        ò
                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                              Green Plants and Microbes
                                                                   120
                                                                                          546
                                                                                                                 140
                                                                                                                                                            141 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro 160
                        100
                                             486
                                                                                                                                        909
                                                                                                                                                                                      999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTGGATCCGCAACTGCTCGACTGCTGCTGCTGGAGGATTCCATGACAAAACGTTTTGAA 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    40
367 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                               607 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTACCG
                     LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                 101 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GlnGlnGlyLygThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Arccccandaacraccccracraccaaagacrcrccrracracracracaaarrrra
                                                                                                                                                                                                                                                                                                                                                             of Arbutin in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               684
165
0
0
0
                                                                                                                                                                                                                                                   RESULT 12

US-10-462-162-33

Sequence 33, Application US/10462162

Publication No. US20040261147A1

GENERAL INFORMATION:

APPLICANT: B.1 duPont de Nemours and Company, Inc.

APPLICANT: Meyer, Knut

APPLICANT: Viitanen, Paul

APPLICANT: Pilnt, Dennis

TITLE OP INTENTION: High Level Production of Arbutin i:

FILE REFERENCE: CL 2155 US NA

CURRENT FALING DATE: 203-06-16

NUMBER OF EXO ID NOS: 54

SOFTWARE: Microsoft Office 97

SEQ ID NO 33

LENGTH: 684

TYPE: DNA

TYPE: DNA

COGAMISM: Escherichia coli

US-10-462-162-33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-4 (1-165) x US-10-462-162-33 (1-684)
                                                                                                                                                                                                          AlaSerProLeuTyr 165
                                                                                                                                                                                                                       667 GCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3e-102
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
Pred. No.:
                                                                                        487
                                                                                                                121
                     81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        247
                                                                                                                                                                                                          161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score:
                                                                                                                              ద
                                                                                                                                                                                g
                     ð
                                      g
                                                         õ
                                                                                   ద
                                                                                                             ò
                                                                                                                                                     ò
                                                                                                                                                                                                         ò
                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
```

ω

```
LOCATION: (893)...(925)

OTHER INFORMATION: 81% homologous to Escherichia coli 4-hydroxybenzoate

OTHER INFORMATION: synthetase, accession number X57434, Smith-Waterman Score=49.
US-10-450-763-26139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100
                      423
                                                   160
                                                                             483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            891
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           euSerGlyProGluLeuAlaLeuGlnLysLeuGJyLysThrProLeuGJyArgTyrLeuP 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20
                                                   141 ArgArgSerArgLeuArgLeuSerGlyLy8ProLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       41 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            332 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                              Sequence 26139, Application US/10450763
; Publication No. U520050186754A1
; GENERAL INFORMATION:
; APPLICANT: Hyseq, Inc
; TITLE OF INVENTION:
; FILE REFERENCE: 790C1P3/US
; CURRENT APPLICATION NUMBER: US/10/450,763
; CURRENT FILING DATE: 2003-06-11
PRIOR PILING DATE: 2001-03-30
; PRIOR PILING DATE: 2000-03-31
; PRIOR PILING DATE: 2000-03-31
; PRIOR PILING DATE: 2000-03-31
; PRIOR APPLICATION NUMBER: 09/649,167
; PRIOR FILING DATE: 2000-08-23
; NUMBER OF SEQ ID NOS: 60736
; SOFTWARE: Custom
; SEQ ID NO 26139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1207
163
1
1
2
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-718-311-4 (1-165) x US-10-450-763-26139 (1-1207)
                                                                                                         161 AlaSerProLeuTyr 165
                                                                                                                         GCGTCACCGTTGTAC 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3.2e-96
811.00
98.2%
97.6%
95.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA
ORGANISM: Homo sapiens
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                               RESULT 15
US-10-450-763-26139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alignment Scores:
121
                                                                              424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ..
No...
                                          ò
                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
               셤
                                                                                                         ઠે
                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                OTHER INFORMATION: Nucleic acid sequence of a nucleic acid fragment inserted into OTHER INFORMATION: expression vector pET29a encoding CPL (from Escherichia coli) a OTHER INFORMATION: pHBA 1-hydroxylase (from Cadida parapsilosis).
                                                                                                                                                                                                                                                                                                                 Arbutin in Green Plants and Microbes
                           140
                                                                             423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValDroValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            304 AGCGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC 363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         64 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    184 Arcccccaacaacrcccccccccccaaacacrcccrracrccrracrccraaarrrrc 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LeudapproGlnLeuLeudapTrpLeuLeuLeuGludapSerMetThrLysdrgPheGlu 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGlu1leLeu
                                                   364 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1971
164
0
1
                                                                                                                                                                                   RESULT 14

US-10-462-162-54

Sequence 54, Application US/10462162

Publication No. US20040261147A1

GENERAL INFORMATION:

APPLICANT: Li duPont de Nemours and Company, Inc.

APPLICANT: Witanen, Paul

APPLICANT: Viitanen, Paul

APPLICANT: Pillt, Dennis

TITLE OF INFORMATION: High Level Production of Arbutin 1:

FILE REFERENCE: CL 2155 US NA

CURRENT FILING DATE: 2003-06-16

NUMBER OF SEQ ID NOS: 54

SOFTWARE: Mcrosoft Office 97

LENGTH: 1971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-4 (1-165) x US-10-462-162-54 (1-1971)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                3.71e-100
843.00
99.4%
99.4%
98.7%
                                                                                                                                   AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: DNA
ORGANISM: artificial sequence
                                                                                                                                                              484 ĠĊĠTĊĄĊĊĠŤŢĠŤĄĊ 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                , OTHER INFORM
US-10-462-162-54
                                                                                                                                    191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score:
                                            ద
                                                                             જે
                                                                                                      g
                                                                                                                                 è
                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    કે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                      Š
```

g

```
952 TAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGT 1011
                           160 roAlaSerProLeuTyr 165
               8 & 8
                                              දු දු
         ઠે
```

Search completed: May 30, 2006, 03:42:00 Job time: 1139.79 secs

THIS PAGE BLANK (USPTO)

200, App 1, Appli 336, App 77335, A 2, Appli

Sequence 2, Appli Sequence 1696, Ap Sequence 7648, Ap Sequence 7649, Ap Sequence 3713, Ap Sequence 7752, A Sequence 21628, A Sequence 21628, A Sequence 21628, A Sequence 20563, A Sequence 20563, A Sequence 20563, A Sequence 2204, A

Sequence 1, Appli Sequence 151, App Sequence 151, Appl Sequence 75461, A Sequence 51, Appl Sequence 29, Appl Sequence 76569, A Sequence 656, Appl Sequence 876, Appl Sequence 876, Appl

Sequence Sequence S

5, Appli 75664, A

Sequence Sequence Sequence Sequence

Sequence 137, App Sequence 41, Appl Sequence 2190, Ap

2907 42 18 55 25 8

Sequence:

Run on:

```
32 GludapSerMetThrLysArgPheGluGlnGlnGlyLysThrValSerValThrMetIle 51 ::::||| :::::||| :::::||| 559 GATGATAAATTGTCAAAAGCCACCAAGAGTCAGGACAGGACAGGAACAGGACCAGCTTCTGCCCAGCTG 618
US-10-524-433-1

US-11-293-697-200

US-11-213-697-200

US-11-213-697-316

US-11-217-529-1696

US-11-217-529-1696

US-11-217-529-1697

US-11-217-529-76487

US-10-489-730-10

US-11-217-529-76487

US-11-217-529-7655

US-11-217-529-7655

US-11-217-529-7656

US-11-217-529-7666

US-11-217-529-7666

US-11-217-529-75461

US-111-11-524-1

US-11-216-605-60

US-11-217-529-75661

US-11-217-529-75661

US-11-217-529-75664

US-11-217-529-7664

US-11-217-529-7664

US-11-217-529-7664

US-11-217-529-7664

US-11-217-529-7664

US-11-217-529-7664

US-11-217-529-7664

US-11-217-529-75664

US-11-217-529-75664

US-11-217-529-75664

US-11-217-529-75664

US-11-217-529-75664

US-11-217-529-75664

US-11-217-529-75664

US-11-217-529-75664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-718-311-4 (1-165) x US-11-293-697-1067 (1-2907)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-11.293-697-1067
Sequence 1067, Application US/11293697
Publication No. US20060105376A1
GENERAL INFORMATION:
APPLICANT: HELIX RESEARH INSTITUTE
TITLE OF INVENTION: Novel full length CDNA
FILLE REPERENCE: H1-A0106
CURRENT APPLICATION NUMBER: US/11/293,697
CURRENT FILING DATE: 2005-12-05
FRIOR APPLICATION NUMBER: US/10/108,260
FRIOR FILING DATE: 2002-03-28
NUMBER: OF SEQ ID NOS: 5458
SEQ ID NO 1067
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   5.18
80.00
42.9%
30.0%
9.4%
 TYPE: DNA
CORGANISM: Homo sapiens
US-11-293-697-1067
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH: 2907
 Pred. No.:
  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1067, Ap
Sequence 2348, Ap
Sequence 2348, Ap
Sequence 1930, Ap
Sequence 1066, Ap
Sequence 1066, Ap
Sequence 34874, A
Sequence 34874, A
                                                                                                   (without alignments)
798.935 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Published Applications NA New:*

1: /ENC_Celerra_SIDS3/ptodata/1/pubpna/US09 NEW_PUB.seq:*
2: /ENC_Celerra_SIDS3/ptodata/1/pubpna/US06_NEW_PUB.seq:*
3: /ENC_Celerra_SIDS3/ptodata/1/pubpna/US07 NEW_PUB.seq:*
4: /ENC_Celerra_SIDS3/ptodata/1/pubpna/VS08 NEW_PUB.seq:*
5: /ENC_Celerra_SIDS3/ptodata/1/pubpna/US10_NEW_PUB.seq:*
6: /ENC_Celerra_SIDS3/ptodata/1/pubpna/US10_NEW_PUB.seq:*
7: /ENC_Celerra_SIDS3/ptodata/1/pubpna/US10_NEW_PUB.seq:*
8: /ENC_Celerra_SIDS3/ptodata/1/pubpna/US11_NEW_PUB.seq:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed
and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -USER=USI0718311 @CGN 11 56 @CUNAL 26052006 164936 13807 -NCPU=6 -ICPU=3 NO MAMP -NEG SCÔRES=0 -WAIT -DSPBLOCK=100 -LONGLOG -DEV TIMEOUT=120 -WARN TIMEOUT=30 -THREADS=1 -XGAPD=10 -XGAPEXT=0.5 -FGAPOP=6 -PGAPEXT=7 -YGAPOP=6 -DELEXT=7
                                                                                                                                                   854
1 MSHPALTQLRALRYCKEIPA......RLSGKPLLLTELFLPASPLY 165
                                                                                    May 30, 2006, 03:03:47 ; Search time 34.9701 Seconds
             GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-11-293-697-1067
US-11-293-697-509
US-11-217-529-2348
US-10-488-619-1930
US-11-217-529-1938
US-11-293-697-1066
US-11-217-529-174332
US-11-293-697-665
                                                           nucleic search, using frame plus p2n model
                                                                                                                                                                                                                                                                                           hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                 242596 segs, 56442199 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SUMMARIES
                                                                                                                                                                                                                                                                                                                                                        Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                    , Xgapext
, Ygapext
, Fgapext
, Delext
                                                                                                                                                                                                                                                                                                                   Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                       US-10-718-311-4
                                                                                                                                                                                      BLOSUM62
Xgapop 10.0 ,
Ygapop 10.0 ,
Fgapop 6.0 ,
Delop 6.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2907
3550
11104
601
1791
2384
489
489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query
Match
                                                                                                                                                                                                                                                                                           늉
                                                                                                                                     Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       80
76.5
76.5
75.5
74.5
73
73
                                                                                                                                                                                      Scoring table:
```

Database :

Result

υ

```
--LeuGlnLygLeuGlyLygThrProLeu 115
                                                                                          :::|||:::::: ||||
727 ATAACTTIGGIGGATICCAGCAGAAAGTIGGAGCIATTICGCCGAAGAIATIGGI 786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 192 GTCACAATGCTCTTTGGTCCTGAGTTACCCTCATGGGAGACGAGAGGCATGGGAGGGGAAA 133
                                                           ------LeuLeuLeuGlu 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValPro 96
                                                                                                                                                                                                                                     Sequence 2348, Application US/11217529

Publication No. US2006009612A1

GENERAL INFORMATION:

APPLICANT: SUNTORY LIMITED

APPLICANT: NAKAMIRA, NORHIESA

APPLICANT: NAKAMIRA, NORHIESA

APPLICANT: RODAMA, YUKIKO

APPLICANT: ASHIEKAL, TOSHIHIKO

TITLE OF INVENTION METHOS FOR ANALYZING GENES OF INDUSTRIAL YEASTS

FILE REFERENCE: $-38-285

CURRENT FILING DATE: 2005-09-02

FRIOR APPLICATION NUMBER: US/11/217,529

CURRENT FILING DATE: 2004-09-02

FRIOR PELING DATE: 2004-09-02

NUMBER OF SEQ ID NOS: 197023

SOFTWARE: Patentin Version 3.3

SEQTUARE: Patentin Version 3.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIle---Pro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                187 GATGCAGGCTCTÁTÁCCCGAÁGAACTTGGT----GAAAAGTTGCTTACCGTTTATTÁ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             33 AspSerMetThrLys------ArgPheGluGlnGlnGlyLysThrVal----Ser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----AsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ----PheValGluGln----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1104
28
28
63
10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-718-311-4 (1-165) x US-11-217-529-2348 (1-1104)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                20 AlaLeuAspProGlnLeuLeuAspTrp------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORGANISM: Saccharomyces pastorianus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         48 ValThrMetIleArgGluGly----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3.89
76.00
38.3$
23.0$
8.9$
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                                                                      130 Ile 130
                                                                                                                                                                                      12 ATT 10
                                                                                                                                                                                                                                  US-11-217-529-2348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: SACCI
US-11-217-529-2348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alignment Scores:
                                101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No.:
                                                        g
                                                                                                                       요
                                                                                                                                                                                   셤
                              ð
                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                               TrpLeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGluLeuAlaLeu 107
                                                                                                                                                                      724 ---TTCAGAĞĞCAATGGĞİÇCAGÇÇC------İCACAAÇÇÇAGCACCACTÇİĞ 768
                                                                                                                                                                                                     GlnLysLeuGlyLysThrProLeuGly-Arg-----TyrLeuPheThrSerSerThrLe 125
                                                                                                                                                                                                                                                                 uThrArgAspPheileGluIle--------GlyArgAspAlaGlyLeuTr 139
                                                                                                                                                                                                                                                                                             829 GACAGCTCCATAAATAGAAGTGAAATATCCAAGCTCCCACTCCAGGGAAGCTGACCACTG 888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AGTGTG------GAGGGAAGCATCTCCCAGGATTCAGGGCGGCCCGCTGACGAC 292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 231 GTCAGGTTGACCTGC------TGG------CCAACCTCAGTTTCTCCAAGG 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                106
                                                                             87
                Arg-----GluGlyPhe-----ValGluGlnAsnGluIleProGluGluLeuProLeu 67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGluGlnGlnGlyLysThrVal 46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SerValThrMetIleArgGluGlyPheValGluGln------Asn 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GlulleProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIle 79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  80 -----LeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValPro--- 96
                                                                                                                                                                                                                                                                                                                                               889 GGTGGATGACTCCCCCAGCGTCCAAACCCTCTCGGCAGTCCCTTGCTGCTCCTCAGGAG 946
                                                                                                                                                                                                                                                                                                                             p-----GlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGlu 156
                                                                          LeuProLysGluSerArgTyrTrpLeuArgGlulleLeuLeuCysAlaAspGlyGluPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3550
115
35
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length:
Matches:
Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-718-311-4 (1-165) x US-11-293-697-509 (1-3550)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 509, Application US/11293697
Publication No. US20060105376A1
GENERAL INFORMATION:
JAPLICANT: HELIX RESEARCH INSTITUTE
TITLE OF INVENTION: Novel full length cDNA
FILE REFERENCE: H1-A0106
CURRENT FILING DATE: 2005-12-05
PRIOR APPLICATION NUMBER: US/10/108,260
PRIOR APPLICATION NUMBER: US/10/108,260
PRIOR PILING DATE: 2002-13-28
NUMBER OF SEQ ID NOS: 5458
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      18.3
76.50
41.1$
30.5$
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                         RESULT 2
US-11-293-697-509/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; OKGAN15M: nom
US-11-293-697-509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Alignment Scores:
                                                                            68
                                                                                                          619
                                                                                                                                         88
                                                                                                                                                                                                     108
                                                                                                                                                                                                                                                                 125
                                                                                                                                                                                                                                                                                                                             139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                97
                                                                        ò
                                                                                                      g
                                                                                                                                                             g
                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                      ઠે
                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            윱
```

셤

셤 ò 유 ઠે g

ò

```
130 IleGlujje------GjyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArg 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 154 GCATTGAGCAGGTATTTC------GACGGGAA---TGGAGG 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ------ArgThrValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             119 LeupheThrSer------SerThrLeuThrArgAspPhe 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  101 SerGlyProGluLeuAlaLeuGlnLys-----LeuGlyLysThrProLeuGlyArgTyr 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              247 ATGGCAGAGGÁGÍTGGCGTGGACTCCGCCCGTGÍTGGGÍCCCAGGCCTCTÁTCA---- 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     358 AGAACCATTGGGCTGAACGGACGCTCCAATACCGTATGGTCCATGTTCGAGTCCTTCAGT 417
                                                                                                                                                            APPLICANT: SUNTORY LIMITED
APPLICANT: NAKAO, YOSHIHIRO
APPLICANT: NAKAO, YOSHIHIRO
APPLICANT: NAKAMUNA, YUKIKO
APPLICANT: KODAMA, YUKIKO
APPLICANT: PUJIMUNA, TOWOKO
APPLICANT: PUJIMUNA, TOWOKO
TITLE OF INVENTION: METHODS FOR ANALYZING GENES OF INDUSTRIAL YEASTS
FILE REFERENCE: S-18-285
CURRENT APPLICATION NUMBER: US/11/217,529
CURRENT PILING DATE: 2005-09-02
PRIOR APPLICATION NUMBER: US 10/932,182
PRIOR APPLICATION NUMBER: US 10/932,182
PRIOR PLING DATE: 2004-09-02
NUMBER OF SEQ ID NOS: 197023
SOFTWARE: PATCHIN VERBION 3.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |||||||:::
---TTTACAGCTGCATTGCCCGTAGTCAGACCATTGCCAGCGAGCTTCCGTCATGATTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   70 LysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    147 LeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   418 TACAACGCTAACCCCTTTCTTTTTTTTTTGCTGCTGATCCCG 459
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1791
36
10
41
47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-718-311-4 (1-165) x US-11-217-529-1938 (1-1791)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1066, Application US/11293697
Publication No. US20060105376A1
GENERAL INFORMATION:
APPLICANT: HELIX RESEARCH INSTITUTE
TITLE OF INVENTION: Novel full length CDNA
FILE REFERENCE: HI-A0106
CURRENT APPLICATION HUMBER: US/11/293,697
CURRENT FILING DATE: 2005-12-05
                                                                      ; Sequence 1938, Application US/11217529; Publication No. US20060099612A1; GENERAL INFORMATION;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Saccharomyces pastorianus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62 ProGluGluLeuPro----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                90 Alagly-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8.99
75.50
34.3$
26.9$
8.8$
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
Query Match:
                                           JS-11-217-529-1938
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-11-217-529-1938
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-11-293-697-1066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQ ID NO 1938
LENGTH: 1791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 1930, Application US/10488619
Publication No. US2006009957841
GENERAL INFORMATION:
APPLICANT Greenle, Winner and Sullivan, P.C.
TITLE OF INVENTION: Human Mitochondrial DNA Polymorphisms, Haplogroups, Associations
TITLE OF INVENTION: Physiological Conditions, And Genotyping Arrays
TITLE OF INVENTION: Physiological Conditions, And Genotyping Arrays
CURRENT APPLICATION NUMBER: US/10/488,619
CURRENT FILING DATE: 2004-03-01
NUMBER OF SEQ ID NOS: 3040
SOFTWARE PATENTIN Version 3.1
SEQ ID NO 1930
LENGTH: 601
                                                                                                                                                                                                                                                                                                        |||||||
----AAGAAGATCTTCTGCACAGAA 1008
                                                                      927
                                                                                                                        117 ArgTyrLeuPheThrSerSerThrLeuThrArgAspPhelleGlulleGlyArgAspAla 136
                                                                                                                                                                   137 GlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGlu 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        151 CGTTCCCTAAGAGGAAAGCCATCACAGAAGTGTTATTGCCACCAGATCAAGGTCACCACT 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      211 GCTGAGCTTCTACCATACAGAGCCATGGCTTGGGCCTCCAGCTTTGATGCATTCTTTAAG 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              271 AATTITAAAAGGGAAAGCAAAATCATCTCTGAATATGACATCACCTTGATTATGACT--- 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AlaGlyArgThrValValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLys 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCAGGGAAGTCCACTTTC---ATCAATACCCTGAGGGGG-----GTGGGGCATGAAGAA 483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PheValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyr 74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----TyrCysLysGluijeProAlaLeuAsp 22
ValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGly
                                                                  ---ATCGTATACATGGTCATCĠĠĄĄĄĠĄĄGAGATATCĠĠĊ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       23 ProGlnLeuLeuAsp-----TrpLeuLeuLeuGluAspSerMetThrLys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   38 ArgPheGluGlnGlnGlyLysThrValSer-----ValThrMetileArgGluGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         :::::|||:::|||| THE STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER STANDER ST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       601
28
28
29
9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-718-311-4 (1-165) x US-10-488-619-1930 (1-601)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          110 LeuGlyLysThrProLeuGly 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      184 AAAGGIGCAGCCCCCACTGGC 504
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10 ArgAlaLeuArg----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1.85
75.50
47.2$
25.2$
8.8$
                                                                                                                                                                                                                                                                                                                                                                                                                             :::||||||
1009 GTCTTTTTG 1017
                                                                                                                                                                                                                                                                                                                                                                                     157 LeuPheleu 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; TYPE: DNA; CORGANISM: Mus musculus
US-10-488-619-1930
                                           886 CTAGCA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 4
US-10-488-619-1930
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
97
                                                                                                                                                                                                                                                                                                                         988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match:
DB:
```

ð 셤 ò 셤 ઠે 셤 ð q d ò 셤 ઠે

ð

Page

us-10-718-311-4.rnpbn

```
ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   71 AGGTGAGCCCTGGCTGCGCGCGCGCCCTCCCCGGCGCCTCC 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           pGlyGluProTrpLeuAlaGlyArgThrValValPro---ValSerThrLeuSerGlyPr 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   11 Tricca cricci regena de de centra de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de constante de cons
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |||||:::|||
| ||||:::|||
| GGAGTGGCGCCCAGGCTCTGAGGTCTGCAACTAGGGCATTGGCCA 188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 17432, Application US/11217529

Sequence 17432, Application US/11217529

Publication No. US20060099612A1

GENERAL INFORMATION:

APPLICANT: SUNTONY LIMITED

APPLICANT: NAKAMURA, NORIHIRO

APPLICANT: RODAMA, YUKIKO

APPLICANT: FUJIMURA, YUKIKO

APPLICANT: RODAMA, YUKIKO

APPLICANT: ASHIKARI, TOSHIHIKO

TITLE OF INVENTION: METHODS FOR ANALYZING GENES OF INDUSTRIAL YEASTS

FILE REFERENCE: 5-38-285

CURRENT APPLICATION NUMBER: US/11/217,529

CURRENT APPLICATION NUMBER: US/11/217,529

FRIOR APPLICATION NUMBER: US/11/217,529

FRIOR APPLICATION NUMBER: US/11/31,529

FRIOR PILING DATE: 2004-09-02

NUMBER OF SEQ ID NOS: 197023

SOFTWARE: Patentin version 3.3

SEQ ID NO 174332

LENGTH 489
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LeuProLeu-LeuProLysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   --LeuLeuProLysGluSerArgTyrTrpLeuArgGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     51 IleArgGluGlyPheValGluGlnAsnGluIleProGluGluLeuPro---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  489
739
32
6
                                                                                                                                                                                                                                                                                                                                                                                                                       Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-718-311-4 (1-165) x US-11-217-529-174332 (1-489)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-718-311-4 (1-165) x US-11-293-697-1066 (1-2384)
                                                                                                                                                                                                                                                                                                                                                                                          Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps:
PRIOR APPLICATION NUMBER: US/10/108,260
PRIOR FILING DATE: 2002-03-28
NUMBER OF SEQ ID NOS: 5458
SOFTWARE: Patentin Ver: 2.1
SEQ ID NO 1066
LENGTH: 2384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Saccharomyces pastorianus
                                                                                                                                                                                                                                                                                                                                                                                       17.9
74.50
48.3%
41.7%
8.7%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.76
73.00
34.3%
29.1%
8.5%
                                                                                                                                                                                                         TYPE: DNA
ORGANISM: Homo sapiens
US-11-293-697-1066
                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                , ORGANISM: Saccha:
US-11-217-529-174332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          11-217-529-174332
                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
```

```
US-10-953-349-34874/c
US-10-953-349-34874/c
US-10-953-349-34874/c
Sequence 34884, Application US/10953349
Publication No. US20060107345A1
GENERAL INFORMATION:
TITLE OF INVENTION: SEQUENCE-DETERMINED DNA FRAGMENTS AND CORRESPONDING POLYPEPTIDES
TITLE OF INVENTION: ENCONDED THERBY
TITLE OF INVENTION: ENCONDED THERBY
TITLE OF INVENTION: US/10/953,349
CURRENT APPLICATION NUMBER: US/10/953,349
CURRENT FILING DATE: 2004-09-30
NUMBER OF SEQ ID NOS: 40252
NUMBER OF SEQ ID NOS: 40252
SEQ ID NO 34874
LENGTH: 1406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     847
CTGTTGAGGAACCATGGTTGGCAGTTAGAACCAGCATTGAGCCGATATTTCGATGGAGAG 150
                                                               99 ThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyr 118
                                                                                                                                                                  129
                                                                                                                                                                                       130 IleGluile-----GlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArg 146
                                                                                                                                                                                                                                                                      307 AGAACAATTGGTTTAAATGGACGCTCTAACACTGTATGGTCCATGTTTGAATCTTTTAGT 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      85 GlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGlu 104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             105 LeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPheThrSerSerThr 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            125 LeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGlyArgArgSerArg 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LeuArgLeuSerGlyLyBProLeuLeuLeuThrGluLeuPheLeuProAlaSerPro 163
                                                                                                                              196 ACACCCATGGCTGAGACCTTGGTTCCTCCCGCGTTGGGACCTAGACCGTTG-----
                                                                                                                                                                    -----ThrLeuThrArgAspPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         79 IleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     65 LeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     147 LeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   51 IleargGluGlyPheValGluGlnAsnGluIlePro---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-718-311-4 (1-165) x US-10-953-349-34874 (1-1406)
                                                                                                                                                                    119 LeuPheThrSerSer-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA
CRGANISM: Zea mays subsp. mays
US-10-953-349-34874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 12.7
73.00
42.0%
24.4%
8.5%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             145
                                                                   151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         828
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No.:
                                                           g
                                                                                                                                요
                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                      윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                 ò
                                                                                             ò
                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
```

```
662 réggananaacconaaaacra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LeuProAlaSerPro 163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          689 CTNCCCTGTTGCCCC 703
                                                                                                                                                                                                                                                                                   11.2
71.50
40.8%
26.4%
8.4%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQ ID NOS: 5458
SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 200
LENGTH: 2490
                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                     TYPE: DNA ORGANISM: murine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-11-293-697-200/c
                                                                                                                                                                                                                                                                    Alignment Scores:
SEQ ID NO 1
                                                                                                                                                                                                                                         US-10-524-433-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           602
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 159
                                                                                                                                                                                                                                                                                                                                        Query Match:
DB:
                                                                                                                                                                                                                                                                                    ..
9
                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        619 GCCACTCAGCCTGAGGCCATTCCTCAGGGGACTAACATCACTGAAGAGAAACCTGGCAGG 678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGlu 104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGlu 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GluGlu-----GlyLysThrValSerVal 48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla 20
       590 TIGITGAIGAAAAGCGCGTCGAICTTCTTGTCGAAGAIGGCCGCCGGCACCTCGCCG 634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              49 ThrMetIleArgGluGlyPheValGluGlnAsnGluIleProGluGluLeuPro----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -----LeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 1, Application US/10524433

Sequence 1, Application US/10524433

Sequence 1, Application US/10524433

GENERAL INFORMATION:

APPLICANT: Functional Genetics, Inc.

TITLE OF INVENTION: RESISTANCE AND TUMORGENESIS: RAPRE GENES

FILE REFERENCE: 10784-023-228

CURRENT APPLICATION NUMBER: US/10/524,433

CURRENT FILING DATE: 2005-02-15

NUMBER OF SEQ ID NOS: 15
                                                                                                                                                                                                                                                                                                                                     3023
35
16
53
28
5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     105 LeuAlaLeuGlnLysLeuGlyLysThrProLeuGly 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       778 -----ATGAAGAGTCTTTCATCCACCAGTGCAGGC 807
                                                                                                                                                                                                                                                                                                                                       Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-718-311-4 (1-165) x US-11-293-697-665 (1-3023)
                                              US-11-293-697-665
Sequence 665, Application US/11293697
Publication No. US20060105376A1
GENERAL INFORMATION:
APPLICANT: HELIX RESEARCH INSTITUTE
TITLE OF INVENTION: Novel full length CDNA
FILE REFERENCE: H1-A0106
                                                                                                                                              CURRENT APPLICATION NUMBER: US/11/293,697
CURRENT FILING DATE: 2005-12-05
PRIOR APPLICATION NUMBER: US/10/108,260
PRIOR FILING DATE: 2002-03-28
NUMBER OF SEQ ID NOS: 5458
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 665
LENGTH: 3023
                                                                                                                                                                                                                                                                                                                                                                                                               Gaps:
                                                                                                                                                                                                                                                                                                                                       50.6
72.00
38.6$
26.5$
8.4$
                                                                                                                                                                                                                                                               ; TYPE: DNA
; ORGANISM: Homo sapiens
US-11-293-697-665
                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              85
                                                                                                                                                                                                                                                                                                                                                                                              Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                        . No. .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
```

```
502 GCTTTGG--TGC------TGGCTCTGTACTCCCACTTGCTTGCTGGTGGCC 544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99 ThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyr 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   119 LeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeu 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPhe 158
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ---TrGree 688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        39 PheGluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGln 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               79 IleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSer 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            59 AsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CNTTTTTCNGCCCACAGCCCCGTGTGTGCCAACANAAATTTTTGGCNNCANGANGNAAGGN
                           656,
754,
833,
                                                                                                                                                                                938, 948, 949
                             654,
749,
824,
887.
                           651,
746,
813,
882,
                           648,
732,
812,
875,
                                                                                                                                                                                923, 927, 928, 935,
                                                                                                                                                                                                                                                                                                          966
33
118
119
4
NAME/KEY: misc_feature
LOCATION: 548, 564, 567, 583, 603, 610, 636, 647,
LOCATION: 661, 667, 669, 675, 691, 710, 713, 719,
LOCATION: 761, 771, 777, 781, 792, 795, 802, 808,
LOCATION: 841, 842, 856, 861, 866, 871, 873, 874,
OTHER INFORMATION: n = A,T,C or G
                                                                                                                                                                                                                                                                                                                                                   Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-4 (1-165) x US-10-524-433-1 (1-966)
                                                                                                                                                                                                                                                                                                            Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: HELIX RESEARCH INSTITUTE
TITLE OF INVENTION: Novel full length cDNA
FILE REFERENCE: H1-A0106
CURRENT APPLICATION NUMBER: US/11/293,697
CURRENT FILING DATE: 2005-12-05
PRIOR APPLICATION NUMBER: US/10/108,260
PRIOR PILING DATE: 2002-03-28
                                                                                                                              FEATURE:
NAME/KEY: misc_feature
LOCATION: 897, 902, 905, 910, 915,
LOCATION: 965, 966
OTHER INFORMATION: n = A,T,C or G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; Sequence 200, Application US/11293697; Publication No. US20060105376A1
```

```
|||||||::|||
1933 CGTTTTGACCAGATCAATGCTGGATGAACGATGAATGTCAATGTCAAAGGAAAAGGA 1992
                                                                                                                                                                                                                                                                                                                                            1670 GAAGCAGAGCCTTGGCTTGGGAAAAGATCTGCATTTGAAGGACTCCAATCAGGGCCAACT 1611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1508 ccarccecaecaecaecaecarccaecaarrcaeeccrreaeecarcceaecaraera 1449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 94 ValValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThr 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     54 GlyPheValGluGlnAanGluIleProGluGluLeuProLeuLeuProLysGluSerArg 73
                                                                                                                                                                                                                                                                                                                                                                                                  75 ---TrpLeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThr
                                                                                                                                                                                                                                                                                                                                                                                                                               127 ArgAspPhelle-----GlulleGlyArgAspAlaGlyLeuTrp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           --GlnGlyLysThrValSerValThrMetIleArgGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3105
32
9
35
18
                                                                                         4534
28
12
33
29
5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                            Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                          63 GluGluLeuProLeuLeuProLysGluSerArgTyr--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-4 (1-165) x US-11-293-697-336 (1-3105)
                                                                                                                                                                                                                                                            US-10-718-311-4 (1-165) x US-10-473-691B-1 (1-4534)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 336, Application US/11293697
Publication No. US20060105376A1
GENERAL INFORMATION:
APPLICANT: HELLX RESEARCH INSTITUTE
TILE OF INVENTION: Novel full length cDNA
FILE REFERENCE: H1-A0106
CURRENT APPLICATION NUMBER: US/11/293,697
CURRENT FILING DATE: 2002-12-05
PRIOR PILING DATE: 2002-12-05
FRIOR FILING DATE: 2002-13-28
NUMBER OF SEQ ID NOS: 5458
SEQ ID NO 336
LENGTH: 3105
LENGTH: 3105
                                                                                                                                                                                        Indels:
; DATABASE ENTRY DATE: 1996-07-02
US-10-473-6918-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           38 ArgPheGluGin-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 69.5
71.00
43.6%
34.0%
8.3%
                                                                                              105
71.50
39.2%
27.5%
8.4%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA
CORGANISM: Homo sapiens
US-11-293-697-336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1388 GGAAGA 1383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              140 GlyArg 141
                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-11-293-697-336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
                                                                        Alignment Scores:
                                                                                                                                                                                        Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pred. No.:
                                                                                                 Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-4/3-091B-1/C

Sequence 1, Application US/10473691B
Sequence 1, Application US/10473691B
Sequence 1, Application US/20060099202A1
GENERAL INFORMATION:
MODICACE CHARLES A.
APPLICANT: NICOJECTEC CHARLES A.
APPLICANT: NICOJECTEC CHARLES A.
APPLICANT: Soltis, Daniel A.
APPLICANT: Soltis, Daniel A.
APPLICANT: Soltis, Daniel A.
APPLICANT: Soltis, Daniel A.
APPLICANT: Soltis, Daniel A.
APPLICANT: SOLTIS DANIEL COTS5/100K313-US1
CURRENT APPLICATION NUMBER: US/10/473,691B
CURRENT FILING DATE: 2002-04-01
PRIOR APPLICATION NUMBER: US 60/280,733
PRIOR PLILNG DATE: 2001-03-30
PRIOR APPLICATION NUMBER: US 60/280,733
PRIOR FILING DATE: 2001-03-30
NUMBER OF SEQ ID NOS: 21
SOFTWARE: Patentin Version 3.1
SEQ ID NO
CURRENT PATEL CONTAINES
FRATURE:
FRATURE:
NAME/KEY: CDS
LOCATION: (757)..(3774)
OTHER INFORMATION:
PRIOR APPLICANT NUMBER:
PRIOR APPLICANT NUMBER:
NUMBER OF SEQ ID NOS: 21
OTHER INFORMATION:
PRIOR APPLICANT NUMBER:
NUMBER OF SEQ ID NOS: 21
OTHER INFORMATION:
PRIOR APPLICANT NUMBER:
NUMBER OF SEQ ID NOS: 21
OTHER INFORMATION:
PRIOR APPLICANT NUMBER:
NUMBER OF SEQ ID NOS: 21
OTHER INFORMATION:
PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT NUMBER:
PRIOR PRIOR APPLICANT 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            618
                                                                                                                                                                                                                                                                                                                                                   GACCCTGGATAGGTAATTTGGCTCCTCTGTCC-----TCAGAATCCCTTCAGCAG 705
                                                                                                                                                                                                                                                                                                                                                                                                                                                557 AGAGACTATTTGCAAGAGGTGCCAGTAGCGTGGCTCAGT---CCAAGTCTGCAAGCCTCA 501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PUBLICATION INFORMATION:
AUTHORS: Naumovski, L. and Cleary, M.L.
AUTHORS: Naumovski, L. and Cleary, M.L.
TITLE: The P513-blinding protein 53BP2 also interacts with Bc12 and impedes
TITLE: cell cycle progression at G2/M
JOURNAL: Mol. Cel. Biol.
                                                                                                                                                                                                                                                                                                                                                                                                  GlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGluIle 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ProGluGlu-----LeuProLeu---LeuProLysGluSerArgTyrTrpLeuArgGlu 78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     79 IleLeuLeuCysAlaAspGlyGluPro------TrpLeuAlaGlyArgThrVal 94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ::: ::: ::: CTGGGGATCCAACATTCTCTCTGGCACTGGCAATTAATGGAGGCTGAGAAGTCCCCTG
                                                                                                                                                                                                                                                                                                          AspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGluGln
                                                                                            2490
34
30
29
                                                                                            Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                            US-10-718-311-4 (1-165) x US-11-293-697-200 (1-2490)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PAGES: 3884-3892
DATE: 1996-07
DATABASE ACCESSION NUMBER: Genbank / U58334
                                                                                                                                                                                                                Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LysLeuGlyLysThrProLeuGly 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           500 GAACCAGGG---ACGCCACTGGGA 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                704 CAGGGACCTCACATG------
                                                                                              44
71.50
45.4%
31.5%
8.4%
    ORGANISM: Homo sapiens
                                                                                                                                       Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 12
US-10-473-691B-1/c
       ; ORGANISM: HOMC
US-11-293-697-200
                                                                        Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VOLUME: 16
                                                                                                                                                                                                                                                                                                                                                   755
                                                                                                                                                                                                                                                                                                                                                                                                  42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   617
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              109
                                                                                                                                                                                   Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ISSUE: 7
                                                                                                 ..
No. .
                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
```

us-10-718-311-4.rnpbn

Oy 120 PheThrSerSerThrLeu-ThrArgAspPheIleGlyArgAspAlaGlyLeuTr 139	APPLICANT: Lin, Lih-Ling	Qy 78 GlulleLeuCysAlaAspGlyGlubroTrp 88 :::	Qy 94
Db 1993 AATTTTGGCCATCAAAAATCCAGCTCCAAGTGAACTTAAAGAGCTTATA 2040 Qy 74 TyrTrpLeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArg 92	Sng	Alignment Scores: Pred. No.: Score: 70.00 Matches: 41 Mismatches: 23 Percent Similarity: 26.1% Mismatches: 66 Query Match: 7. Gaps: 7	US-10-718-311-4 (1-165) x US-11-217-529-77335 (1-1191) QY 19 ProAlaLeuAspProGInLeuLeuAspTrpLeuLeuGluAspSerMetThr 36

OM protein

Run on:

Sequence:

```
CL650764 PRIOTION
CL650764 PRIOTION
CL688660 PRIOTION
AG192305 PRIOTION
BZ554576 PAC82-164
AJ863570 RA12-603
BZ564576 PAC82-164
AJ863570 RA12-603
BZ564576 PAC82-164
AJ863570 RA12-603
BJ932163 BJ932163
BJ932163 BJ932163
BJ932163 BJ932163
BJ932163 BJ932163
BJ732 AGENCOURT
AY850312 MAGNADORT
AY850312 MAGNADORT
AY850312 LIGY-G86-
CK288046 CO1016B12
CK288046 CO1016B12
CK208417 FGAS02118
BJ578705 BJ578705
BJ56157 BJ566157
CL393085 ZMMBBB019
CV120546 AGENCOURT
                                                                                                                                                                                                                                                                                        BM265186 FW63f10.Y
BJJ74078 BJJ74078
BZ578446 msh2_5870
CV242171 WS02514.B
CL106163 ISB1-46F6
CG472449 ZMMBBD028
                                                                                                                                                                                                                                                                                                                                                 AW236750 xm84e06.x
AW058694 fe50b08.y
DA27761 DA275761
DB224823 DB224823
BC056456 Mus muscu
                                                                                                                                                                                                                                                                                                                                                                                                                                                            GSS 09-JUL-2004
                                                                                                                                                                                                                                                                      CF513983 CAbud0007
BF543156 UI-R-AF1-
BM265186 fw63f10.y
BJ974078 BJ974078
                                                                                                                                                                                                                                                                                                                                                                                                                                                          CL666350 832 bp DNA linear GSS 09-JUL-200 PRI0152b_A03 - PRI0152b.B21 (832) Mixed stage fosmid library of P. pacificus var. California Pristionchus pacificus genomic, genomic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 (bases 1 to 832)
Srinivasan, J., Otto, G.W., Kahlow, U., Geisler, R. and Sommer, R.J.
AppaDB: an AcedB database for the nematode satellite organism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Evolutionary Biology
Max-Planck-Institute for Developmental Biology
Spemannstr. 37-39, Tuebingen D-72076, Germany
Tel: 0049707160139,
Fax: 00497071601498
Email: ralf.sommer@tuebingen.mpg.de
This library was generated at Caltech, Pasadena, USA and end sequenced at Vancouver, Canada.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pristionchus pacificus
Eukaryota, Metazoa, Nematoda, Chromadorea, Diplogasterida,
Neodiplogasteridae, Pristionchus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pristionchus pacificus
Nucleic Acids Res. 32 (1), D421-D422 (2004)
14681447
                                                                                                                                                                                                                                                                                                                                                                                                                      ALIGNMENTS
                                    BZ551713
BZ564576
AJ663470
BZ578851
CL666699
BG79182
BG793163
BG792163
BM870249
CZ288046
CO384679
BM870249
CZ288046
CO384679
BM870249
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
CZ288046
BG565781
CZ288046
BG565781
CZ288046
CZ288046
BG565781
CZ288046
CZ288046
BG565781
CZ288046
CZ288046
BG565781
CZ288046
CZ288046
BG565781
CZ288046
CZ288046
BG565781
CZ288046
CZ288046
BG565781
CZ288046
CZ288046
BG565781
CZ288046
CZ288046
BZ566157
CZ288046
CZ288046
BZ566157
CZ288046
CZ288046
BZ566157
                                                                                                                                                                                                                                                                                                                    CV242171
CL106163
CG472449
AW236750
AW058694
DA275761
DB224823
BC056456
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CL666350.1 GI:50159025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pristionchus pacificus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: Sommer RJ
                                                                                                                                             515
563
838
840
1110
862
739
1141
753
581
666
668
826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         survey sequence.
         85.5
85.5
85.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 1
CL666350/c
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
PUBMED
COMMENT
 CL666350 PRI0152b
CL687382 PRI0146c
AG192190 Pan trogI
AG192116 Pan trogI
                                                             May 30, 2006, 01:43:54 ; Search time 4259.96 Seconds (without alignments) 3248.869 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                       1 MSHPALTQLRALRYCKEIPA......RLSGKPLLLTELFLPASPLY 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Description
        GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
                                             nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                   48236798 seqs, 27959665780 residues
                                                                                                                                                                                                                     hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUMMARIES
                                                                                                                                                                                                                                                                    Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CL666350
CL687382
AG192190
AG192116
                                                                                                                                        BLOSUM62
Xgapop 10.0, Xgapext
Ygapop 10.0, Ygapext
Fgapop 6.0, Fgapext
Delop 6.0, Delext
                                                                                                                                                                                                                                         Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                    US-10-718-311-4
854
                                                                                                                                                                                                                                                                                                                                                                                                                                     Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         72.4
59.5
30.7
27.6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       귱
                                                                                                     Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score
                                                                                                                                          Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         618
508
262
236
```

Database :

Result Š.

Total number

Searched:

```
Gaps:
                                                                                                                                                                                                                                                                                                                                       US-10-718-311-4 (1-165) x CL687382 (1-828)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AG192190.1 GI:45224366
                                                                                                                                                                                                                                   1.538-45
508.00
99.0%
99.0%
59.5%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Hominidae; Pan.
                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  seguence
                                                                                                                                                                                                                        Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GSS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           772
                                                                             source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE
JOURNAL
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AUTHORS
                                                                FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AG192190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMMENT
                                                                                                                                                                                            ORIGIN
                                                                                                                                                                                                                                                   Score:
                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                  원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CL687382 82 09-JUL-2004 PRI0146c_BR (828) Mixed stage fosmid library of P. pacificus var. California Pristionchus pacificus genomic, genomic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             165
                                                                                                                                                                                                                                                                                                                                                                                                                                                       105
                                                                                                                                                                                                                                                                                                                                                   713
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AlabeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPheThrSerSerThrLeu 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         593
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ThrArgAspPhe11eGlu11eGlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeu 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      473
                                                                                                                                                                                                                                                                                                                                        65
                                                                                                                                                                                                                                                                                                                                                                                              85
                                                          /organism="Pristionchus pacificus"
/mol_type="genomic DNA"
/strain="california"
/db.xref="taxon:54126"
/clone lib="Mixed stage fosmid library of P. pacificus var. California"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pristionchus pacificus
Pristionchus pacificus
Bukaryota; Metazoa; Nematoda; Chromadorea; Diplogasterida;
Neodiplogasteridae; Pristionchus.
1 (bases 1 to 828)
Srinivasan, J., Otto, G.W., Kahlow, U., Geisler, R. and Sommer, R.J.
AppabB: an AcedB database for the nematode satellite organism
Pristionchus pacificus
Nucleic Acids Res. 32 (1), D421-D422 (2004)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGCTGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTTGTTATGTGCCGATGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTAAGCGGGCCGGAGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCGTTACAAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTCACACATCACACTTA
                                                                                                                                                                                                                                                                                                                                    ValSerValThrMetIleArgGluGlyPheValGluGlnAsnGluIleProGluGluLeu
                                                                                                                                                                                                                                                                                                                                                                                              ProteubeuProLysGluSerArgTyrTrpLeuArgGluIleLeubeuCysAlaAspGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                       GluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGluLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Accedencritarreagaradecerearecedecreresedeceacerrecedere
                                                                                                                                                'note="Vector: pEpifos-5 Fosmid vector'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Evolutionary Biology
Max-Planck-Institute for Developmental Biology
Spemanustr. 37-39, Tuebingen D-72076, Germany
Teat: 00497071661371
Fax: 00497071661498
Email: ralf.sommer@tuebingen.mpg.de
                                                                                                                                                                                                         832
120
0
0
                                                                                                                                                                                                      Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                              Gaps:
                                                                                                                                                                                                                                                                                                          US-10-718-311-4 (1-165) x CL666350 (1-832)
Seq primer: T7
Class: fosmid ends.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Burvey sequence.
CL687382
CL687382.1 GI:50196135
                                                                                                                                                                                                      9.49e-58
618.00
100.0%
100.0%
72.4%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Contact: Sommer RJ
                                           1. .832
                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                            Alignment Scores:
                                                                                                                                                                                                                                                                                                                                       46
                                                                                                                                                                                                                                                                                                                                                                  832
                                                                                                                                                                                                                                                                                                                                                                                              99
                                                                                                                                                                                                                                                                                                                                                                                                                         772
                                                                                                                                                                                                                                                                                                                                                                                                                                                     98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                           Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 2
CL687382
                                  FEATURES
                                                                                                                                                               ORIGIN
```

ð 셤 ઠે 쉽 ò g ò ద ò ద ઠ

```
Submitted (07-344-2002) Hong-Seog Park, Korea Research Institute of Bioscience and Biotechnology (KRIBB), Genome Research Center (GRC); 52, Oun-dong, Yusong-gu, Daejeon 305-333, Korea (E-mail:redstone@mail.kriba.re.kr, URL:http://phs.grc.kribb.re.kr/, Tel:82-42-866-7181, Fax:82-42-866-7409)
Clones are derived from the chimpanzee BAC library RP-43 This BAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AG192190 536 bp DNA linear GSS 06-MAR-2004
Pan troglodytes DNA, clone: RP43-068J06.T7, genomic survey
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            592 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   652 cagcaggaaaaacggtaagcgtgacgatgatccgcgaagggtttgtcgagcagaatgaa 711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pan troglodytes (chimpanzee)
Pan troglodytes
Eukaryota: Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Euarchontoglires; Primates; Catarrhini;
                                                                                                                                                                                                                                                         pacificus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        41 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Park, H., Kim, Y., Kim, S., Han, Y., Woo, T., Park, K., Eun, C.J., Hoon, S.T., Chu, M., Kim, H., Joo, S., Kim, C., Song, W. and Yoo, H. BAC end sequences of Library RP-43 Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2 (bases 1 to 536)
Park, H., Kim,Y., Kim,S., Han,Y., Woo,T., Park,K., Eun,C.J.,
Park,H., Kim,Y., Kim,H., Joo,S., Kim,C., Song,W. and Yoo,H.
Direct Submission
       end
This library was generated at Caltech, Pasadena, USA and sequenced at Vancouver, Canada.
Seq primer: T7
Class: fosmid ends.
Location/Qualifiers
                                                                                                                                                                                                                                                            of P.
                                                                                                                          1. .828
/organism="Pristionchus pacificus"
/organism="genomic DNA"
/mol_type="genomic DNA"
/strain="California"
/db_xref="taxon:54126"
/clone_lib="Mixed stage fosmid library of var. Galifornia"
/note="Vector: pEpifos-5 Fosmid vector"
                                                                                                                                                                                                                                                                                                                                                                                                                828
0 1 0 0
                                                                                                                                                                                                                                                                                                                                                                                                              Length:
Matches:
Conservative:
Mismatches:
Indels:
```

```
Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        population
   LIBRARY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Zea mays
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Zea mays
                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                              Query Match:
DB:
                                                                                                                                                                                                                                                                            No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 5
CC048367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                     PEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMMENT
                                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Park, H., Kim, Y., Kim, S., Han, Y., Woo, T., Park, K., Eun, C.J.,
Hoon, S.T., Chu, M., Kim, H., Joo, S., Kim, C., Song, W. and Yoo, H.
Direct Submitseion

Submitted (07-3AN-2002) Hong-Seog Park, Korea Research Institute of
Bioscience and Biotechnology (KRIBB), Genome Research Center (GRC);
52, Oun-dong, Yusong-gu, Daejeon 305-333, Korea

(E-mail: redstonedmail kribb. re.kr, URL: http://phs.grc.kribb.re.kr/,
Tel:82-42-866-7181, Fax:82-42-860-4409)

Tel:82-42-866-7181, Fax:82-42-860-4409

Clones are derived from the chimpanzee BAC library RP-43 This BAC
end was generated during the R&D process and may have higher chance
of clone tracking errors.
end was generated during the R&D process and may have higher chance of clone tracking errors.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AG192116 533 bp DNA linear GSS 06-MAR-2004
Pan troglodytes DNA, clone: RP43-068H07.T7, genomic survey
sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        444 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21 LeuAspProGlnLeuLeuAspTrpLeuLeuCluAspSerMetThriysArgPheGlu 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Euteleostomi,
Mammalia, Eutheria, Euarchontoglires, Primates, Catarrhini,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Park, H., Kim, Y., Kim, S., Han, Y., Woo, T., Park, K., Eun, C.J., Hoon, S.T., Chu, M., Kin, H., Joo, S., Kim, C., Song, W. and Yoo, H. Unpublished
                                                                                                                                                1. :536
/organism="pan troglodytes"
/organism="pan troglodytes"
/db_xref="taxon:9598"
/clone="RP43-068006.T7"
/sex="male"
/clol_type="lymphocytes"
/clone_lib="RP-43 Chimpanzee Male BAC Library"
                                                                                                                                                                                                                                                                                                                                            536
0
0
0
                                                                                                                                                                                                                                                                                                                                         Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-718-311-4 (1-165) x AG192190 (1-536)
                                                                                                                                  Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pan troglodytes (chimpanzee)
Pan troglodytes
                                                                                  : pBACe3.6
: EcoRI
                 f clone tracking errors
PRIMERS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AG192116.1 GI:45224292
                                                                                  Vector : pBACe
R.Site 1 : EcoRI
R.Site 2 : EcoRI
                                                                                                                                                                                                                                                                                                                                         1.67e-18
262.00
100.0%
100.0%
30.7%
                                                  Sequencing: T7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (bases 1 to 533)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hominidae; Pan.
                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AG192116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIMERS
                                                                LIBRARY
                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
                                                                                                                                                                                                                                                                                                                          Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LOCUS
DEFINITION
                                                                                                                                                      source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 4
AG192116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMMENT
                                                                                                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
```

Sequencing: T7

```
GSS 20-OCT-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                               21 LeuaspproGinLeuLeuaspTrpLeuLeuLeuGluaspSerMetThrLysArgPheGlu 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta,
Spermatophyta, Magnoliophyta, Liliopsida, Poales, Poaceae, PACCAD
clade, Panicoldeae, Andropogoneae, Zea.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CCU48367 115-04B1-B12 UniformMu MuTAIL Library Zea mays genomic clone 01S-415-4-7tc12-E12, genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Deputation
Unpublished (2003)
Contact: Donald R. McCarty
Plant Molecular and Cellular Biology Program
University of Florida
PO 110690 Gainesville, FL 32611-0690, USA
Tel: 352-392-1928 x322
Email: drumufi.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 (bases 1 to 515)
Latshaw,S., Tan,B-.C., Settles,A.M. and McCarty,D.R.
Sequence tagged transposon insertions from the UniformMu maize
                                                                                                                                                                 /sex="male"
/cell_type="lymphocytes"
/clone_lib="RP-43 Chimpanzee Male BAC Library"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1. 515
/organism="Zea mays"
/orltype="genomic DNA"
/strain="W22 (ACR, bz1-m9)"
/cultivar="UniformMu"
/db_xref="taxon:457"
/clone="015.415-4-7tol2-E12"
/clone="lib="UniformMu MuTAIL Library"
                                                                                                                                                                                                                                                                              Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        500 CAGCAGGAAAACGGTTATCGTGACGATGATC 532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   41 GlnGlnGlyLysThrValSerValThrMetile 51
                                                                                       /organism="Pan troglodytes"
/mol_type="genomic DNA"
/db_xref="taxon:9598"
/clone="RP43-068H07.T7"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OlS-415-4
Class: transposon insertion site.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                              US-10-718-311-4 (1-165) x AG192116 (1-533)
                                                    Location/Qualifiers
                   : ECORI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CC048367.1 GI:29463258
                                                                                                                                                                                                                                                                            1.27e-15
236.00
92.2%
92.2%
27.6%
Vector :
R.Site 1 :
R.Site 2 :
```

```
14681447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GSS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match:
DB:
                                                                                                             Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCUS
     М
Э
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 7
CL688660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score:
     Pred.
                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CL650764 563 bp DNA linear GSS 09-JUL-2004 PRI0110b_F06 - PRI0110b.B21 (563) Mixed stage fosmid library of P. pacificus var. California Pristionchus pacificus genomic, genomic
/note="Vector: TOPO-PCR4; DNA flanking Mu transposon insertions in Mu inactive lines were extracted from the UniformMu maize population by the thermo assymmetric interlaced PCR (TAIL) protocol using primers specific for the Mu terminal inverted repeat and a set of 16 arbitrary primers. Amplicons were size enriched using Sepharose 400 spin columns and cloned into the TOPO PCR4 vector."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Eukaryota; Metazoa; Nematoda, Chromadorea; Diplogasterida; Neodiplogasteridae; Pristionchus.

1 (bases 1 to 563)
Srinivasan, J., Otto, G.W., Kahlow, U., Geisler, R. and Sommer, R.J. Appabbs: an AcedB database for the nematode satellite organism Pristionchus pacifica, 19, 19421-19422 (2004)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /db_xref="taxon:54126"
/clone lb="Mxed stage fosmid library of P. pacificus
var. Callfornia"
/note="Vector: pEpifos-5 Fosmid vector"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      end
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Evolutionary Biology
Bevolutionary Biology
Max-Planck-Institute for Developmental Biology
Max-Planck-Institute for Developmental Biology
May-Danck-Institute for Developmental Biology
Jeannant 13-7-39, Tuebingen D-72076, Germany
Tel: 004970716011371
Fax: 00497071601139
Fax: 00497071601139
Fax: 00497071601139
Fax: 00497071601139
Fax: 00497071601139
Fax: 0049707160139
Fax: 0
                                                                                                                                                                                                                                                                       515
40
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1. 563
Organism="Pristionchus pacificus"
/mol_type="genomic DNA"
/strain="California"
                                                                                                                                                                                                                                                                    Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                        Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                             x CC048367 (1-515)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sed primer: T7
Class: fosmid ends.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                survey sequence.
CL650764
CL650764.1 GI:50129323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pristionchus pacificus
Pristionchus pacificus
                                                                                                                                                                                                                                                                 1.2e-12
209.00
97.6%
97.6%
24.5%
                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-718-311-4 (1-165)
                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAA 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gln 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14681447
                                                                                                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 6
CL650764
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                          Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                              ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
```

```
CL688660 838 bp DNA linear GSS 09-JUL-2004 PRI014a_D06_2 - PRI014a_BR (838) Mixed stage fosmid library of P. pacificus var. California Pristionchus pacificus genomic genomic
                                                                                                                                                            147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        P. pacificus
                                                                                                                                                           128 AspPhelleGlulleGlyArgAspAlaGlyLeu-TrpGlyArgArgArgLeuArgLe
                                                                                                                                                                               2 GACTITATIGAGATAGGCCGTGATGCCGGGCTCGTGGGGGGGCGACGTTCCCGCCTGCGATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sommer, R.J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyr-CysLysGluIleProAl
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pristionchus pacificus
Pristionchus pacificus
Pristionchus pacificus
Pristionchus pacificus
Bukaryota; Medezaca; Nematoda; Chromadorea; Diplogasterida;
Neodiplogasteridae; Pristionchus.
1 (bases 1 to 838)
Srinivasan,J., Otto,G.W., Kahlow,U., Geisler,R. and Sommer,R.J AppaDB: an AcedB database for the nematode satellite organism
Pristionchus pacificus
Nucleir Acids Res. 32 (1), D421-D422 (2004)
                                                                                                                                                                                                                                end
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20 aLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLys 37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Contact: Sommer RJ

Evolutionary Biology

Max-Planck-Institute for Developmental Biology
Spemannstr. 37-39. Tuebingen D-72076, Germany
Tel: 00497071601371

Fax: 00497071601498

Email: ralf.sommer@tuebingen.mpg.de
Email: ralf.sommer@tuebingen.mpg.de
sequenced at Vancouver, Canada.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      οĘ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /clone lib="Mixed stage fosmid library var. California" /note="Vector: pEpifos-5 Fosmid vector"
563
0
0
1
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /organism="Pristionchus pacificus"
/mol_type="genomic DNA"
/strain="California"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
Length:
Matches:
Conservative:
Mismatches:
                                                                        Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps:
                                                                                       Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /db xref="taxon:54126"
                                                                                                                           US-10-718-311-4 (1-165) x CL650764 (1-563)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-718-311-4 (1-165) x CL688660 (1-838)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence ...
Seq primer: T7
Class: fosmid ends.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                  CL688660.1 GI:50197738
1.05e-09
183.00
97.4%
97.4%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3.98e-08
171.00
94.7%
94.7%
20.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1. .838
                                                                                                                                                                                                                                                                                                                                                                                                survey sequence.
                    Score:
Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
```

```
81 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            101 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ------GlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGly 149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                363 AGCGACAGCGCCTTCGAGCGCGGGCCCATCGAAGTCTGCCGCTATCCGGCGGCGGCCGGTCTG 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    21 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             41 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CCCGCCGAGGTCCGCGCCGAGGGTCTCTGGGGCCGTCGCTCACGGTTTTCCCGCGGCGCG 482
                                                                                               Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales; Pseudomonadaceae; Pseudomonas.

1 (bases 1 to 1110)
Spencer, D.H., Raymod, C.K., Smith, E.E., Sims, E.E., Hastings, M., Burns, J.L., Kaul, R. and Olsen, M.V.
Whole-Genome-Sequence variation among multiple isolates of Psedomonas aeruginosa library.

J. Bacteriol. (2002) In press
Contact: Chris K. Raymond
Genome Center
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 IleProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ThrSerSerThrLeuThrArgAspPhelleGluIle-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .89 TGCCAGGGGCTCGACGTC-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             243 chacangeccacgacgnocrecteragenericeccecangecacgegecera
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /db_xref="taxon:287"
/clone="pacs1-60_3287"
/clone_lib="pacs1-60"
/note="clinical isolate 1-60 Whole genomic shotgun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          144 GTCGAACCCTGCTGGAAGGCTGGCAGACCCTGCGGGGACGAC---
                                                                                                                                                                                                                                                                                                                                                                                                                                                 /organism="Pseudomonas aeruginosa"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                    Dunces Central Day Mashington University of Washington Box 352145, Seattle, WA 98105-2145, USA Tel: 2062216954 Fax: 2066857244 Email: craymond@u.washington.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /mol_type="genomic DNA"
/strain="1-60"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-718-311-4 (1-165) x BZ551713 (1-1110)
                                                                                                                                                                                                                                                                                                                                                                                         Class: shotgun.
Location/Qualifiers
                         GI:27155321
                                                                                     Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1.28e-05
150.00
37.7%
29.8%
17.6%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      library."
   BZ551713
BZ551713.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match:
DB:
                       VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No.:
                                                                                                                                     REFERENCE
AUTHORS
       ACCESSION
                                                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                              TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                   Park, H., Kim, Y., Kim, S., Han, Y., Woo, T., Park, K., Eun, C.J.,
Hoon, S.T., Chu, M., Kim, H., Joo, S., Kim, C., Song, W. and Yoo, H.
Direct Submission
Bubmitted (UTJAN-2002) Hong-Seog Park, Korea Research Institute of
Submitted (TJAN-2002) Hong-Seog Park, Korea Research Center (GRC);
52, Oun-dong, Yusong-gu, Daejeon 305-333, Korea
(E-mail:redeforedemail.kribb.re.kr, URL:http://phs.grc.kribb.re.kr/,
Tel:82-42-866-7181, Fax:82-42-866-4409)
Clones are derived from the chimpanzee BAC library RP-43 This BAC
end was generated during the R&D process and may have higher chance
of clone tracking errors.
                                                                                   AG192305 440 bp DNA linear GSS 06-MAR-2004
Pan troglodytes DNA, clone: RP43-068M07.T7, genomic survey
sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BES51713 110 bp DNA linear GSS 17-DEG-2002 pacs1-60_3287.x1 pacs1-60 Pseudomonas aeruginosa genomic clone pacs1-60_3287, genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Buteleostomi,
Mammalia, Eutheria, Euarchontoglires, Primates, Catarrhini,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                           Park, H., Kim, Y., Kim, S., Han, Y., Woo, T., Park, K., Eun, C.J., Hoon, S.T., Chu, M., Kim, H., Joo, S., Kim, C., Song, W. and Yoo, H. BAC end sequences of Library RP-43 Unpublished
CCTGGATCCGCAACTGCTCGACTGGTTGCTGGAGGATTCCATGACAAAA 836
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /clone="RP43-068M07.T7"
/sex="male"
/clol_type="lymphocytes"
/clone_lb="RP-43 Chimpanzee Male BAC Library"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /organism="Pan troglodytes"
/mol_type="genomic DNA"
/db_xref="taxon:9598"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           409 CTGGATCCGCAACTGCTCGACTGGTGT 438
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       21 LeuAspProGlnLeuLeuAspTrpLeuLeu 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-718-311-4 (1-165) x AG192305 (1-440)
                                                                                                                                                                                                              Pan troglodytes (chimpanzee)
Pan troglodytes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R.Site 2 : Front
                                                                                                                                                    AGI92305
AG192305.1 GI:45224481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.64e-07
160.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequencing: T7
                                                                                                                                                                                                                                                                                                                                                                                                         (bases 1 to 440)
                                                                                                                                                                                                                                                                                        Hominidae; Pan.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LIBRARY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
                                                                                                                                                                                            GSS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores
                     785
                                                                                             LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match:
                                                                                                                                                  ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 9
BZ551713
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ..
..
                                                                                                                                                                                                                                                                                                       REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                         AUTHORS
                                                         RESULT 8
AG192305
                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                 TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
```

302

```
Raistonia solanacearum
Raistonia solanacearum
Bacteria; Proteobacteria; Betaproteobacteria; Burkholderiales;
Burkholderiaceae; Raistonia.
1 (bases 1 to 719)
Munoz-Soriano, V., Arahal, D.R., Terol, J., Buades, C., Perez-Perez, A., Llop, P., Belmonte, U.C.F., Lopez, M. and Perez-Alonso, M.
Random genome sequencing of Raistonia solanacearum strain IVIA 1602 and comparative analysis with strain GMI1000
                                                                                                                                                                                    AJ863670 739 bp DNA linear GSS 30-NOV-2005 Ralstonia solanacearum GSS, clone V789R, genomic survey sequence. AJ863670
              -----GlyhrgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLys 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             97 ValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGly 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            117 ArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGlu------ 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            323 CATGCGCTGTTCGCCGATCCGCGCGTTGCACGGGCGCCTTCGAGTTTGCCCCAGCTGGAT 264
                                               383 gecgaggreckkeceaakkarererkkkekekekekekekekekerrrrecegegeeeeere 324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                77 ArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValPro 96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        25 LeuleuAspTrpLeuLeuLeuGluAspSerMetThrLy8ArgPheGluGlnGlnGlyLy8 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Dr.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ccececaeceaeceaeceaecearrecrisaaeacecrissececaeceaecerces
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             45 ThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGluIleProGluGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઇ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         de Valencia,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Direct Submission
Submitted (18-NOV-2004) Genetica, Universidad
Moliner, 50, Burjassot, Valencia 46100, SPAIN
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  739
23
23
38
38
3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              solanacearum"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
Matches:
Conservative:
Mismatches:
                                                                                   160
                                                                                                    323 GGGGTGCTGGTGGCGGAGGTGTACCTACCG 294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /organism="Ralstonia sola
/mol_type="genomic DNA"
/grzain="IVIA 1602"
/db xref="taxon:305"
/clone="V789R"
                                                                                   ProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-718-311-4 (1-165) x AJ863670 (1-739)
                                                                                                                                                                                                                                          AJ863670.1 GI:82937082
GSS; genome survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                    2 (bases 1 to 739)
Munoz-Soriano, V.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0.0254
118.00
38.9%
25.1%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Scores:
                                                                                   151
                133
                                                                                                                                                                                                                                        VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                   AJ863670/c
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                REFERENCE
AUTHORS
                                                                                                                                                                                                                          ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment
                                                                                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       JOURNAL
                                                                                                                                                     RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                   TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORIGIN
                                         임
                                                                                 ò
                                                                                                                  용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                   GSS 17-DEC-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ---GAATGC 618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       82 CysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSer 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPheThr 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                443 GACAGCGCCTTCGAGCGCGGGCCCCATCGAAGTCTGCCGCTATCCGGCGGCGGCCGGTCTGCCC 384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGluGln 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                        BZ564576
pac82-164_4819.y2 pac82-164 Pseudomonas aeruginosa genomic clone
pac82-164_4819, genomic survey sequence.
                                                                                                                                                                                       Pseudomonas aeruginosa
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas.
                                                                                                                                                                                                                                      1 (bases 1 to 862)
Spencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastings, M.,
Burne, J.L., Kaul, R. and Oleen, M.V.
Whole-Genome-Sequence variation among multiple isolates of
Psedomonas aeruginosa library
J. Bacteriol. (2002) In press
Contact: Chris K. Raymond
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GlnGlyLysThrvalSerValThrMetIleArgGluGlyPheValGluGlnAsnGluIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      602 ---------CCTACCGGCAGTAGCGGCTGGGAGGTCCGCGAGGTCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SerSerThrLeuThrArgAspPhelleGluIle-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GECTCGGGCTTCGACCTGCTCGTCGGCACCCGCTCGCTGGCGGAGTTGCTGTTCAGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref="taxon:287"
/clone="pac82-164_4819"
/clone_lib="pac82-164"
/note="dlinical isolate 2-164 Whole genomic shotgun
library."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  862
45
11
56
38
3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          662 AACCCCTGCTGGAGGCCTGGCAGACCCTGCGCGACGAC----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
Matches:
Conservative:
Mismatches:
483 CTCGGGGTGCTGGTGGCGGAGTGTACCTACCG 515
                                                                                                                                                                                                                                                                                                                                                              Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145,
Tel: 2062216954
Fax: 206687244
Email: craymond@u.washington.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                      craymond@u.washington.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /mol_type="genomic DNA"
/strain="2-164"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       organism="Pseudomonas"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-718-311-4 (1-165) x BZ564576 (1-862)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Location/Qualifiers
                                                                                                                                    BZ564576.1 GI:27190626
                                                                                                                                                                       Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0.000191
138.00
37.3%
30.0%
16.2%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1. .862
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Class: shotgun.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                    BZ564576
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             503
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             122
                                                                                                                ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pred. No.:
                                               BZ564576/c
                                                                                                                                                                                                                                          REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                            JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORIGIN
```

ઠ 유 ઠે g a

ઠે

g

ò

ઠે

a ð

69ProLysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAspGlyGlu 86 [1]	115 LeuGlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheileGluile 132	r) by sen	RS AL BD SD SD SC SC SC SC SC SC SC SC SC SC SC SC SC	ent Scores: No.:
8 8 8 8 8	8 6 8 6 8 6 8	RESULT CL69699 CL69699 LOCUS DEFINIT ACCESSIO VERSION KEYWORD SOURCE ORGAN REFEREN	AUTHOR TITLE JOURNA PUBME COMMENT FEATURES SOU	ORIGIN Alignm Pred. Score: Percen
132	578851 h2 6034.x1 msh Pseudom nomic survey sequence. 578851.1 GI:27213912 S. eudomonas aeruginosa eudomonas aeruginosa cteria; Proteobacteria eudomonadaceae; Pseudo (bases 1 to 1141)	iltiple isolates o	/mol type="genomic DNA" /gtrain="MSH" /db xref="team.287" /clone="mab2 6034" /clone="mab2 6034" /clone="mab2 6034" /note="mab1 6034" /note="mab1 folded fold	Alaleudspero

```
21.8
91.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Daphnia magna
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                108 Gln 108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 537 CAG 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
Pred. No.:
Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 15
BJ932163
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
JOURNAL
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                             셤
                                                                                      ò
                                                                                                                    g
                                                                                                                                                                                    g
                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                        유
                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                       BG799182 581 bp mRNA linear EST 21-MAY-2001 fp31c10.yl zebrafish gridded kidney Danio rerio cDNA clone IMAGE:4744722 5' similar to TR:Q9Y4G8 Q9Y4G8 KIAA0313 PROTEIN. ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CDNA Library Preparation: Leonard Ira Zon DNA Sequencing by:
Mashington University Genome Sequencing Center Clone distribution:
Genome Systems, St. Louis, Missouri (web address:
www.genomesystems.com) (email contact: info@genomesystems.com) and
Research Genetics, Huntsville, Alabama (web address:
www.resgen.com) (email contact: info@genomesystems.com) and
RessourcenzentrumPrimarDatenbank, Berlin, Germany (web address:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /clone_lib="zebrafish gridded kidney"
/note="Organ: kidney; Westor: pBK-CMY; Site_1: EcoRI;
Site_2: XhoI; Oligo dT cDNA library constructed from mRNA
pooled from pooled kidney tissue from 300 adult
                                                                                                                                                                                                                                                                                                                                                    Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Actinopterygii; Neopterygii; Teleostei; Ostariophysi; Ospriniformes; Cyprinidae; Danio.

1 (bases 1 to 581)
Clark, M., Johnson, S.L., Lehrach, H., Lee, R., Li, F., Marra, M., Eddy, S., Hillier, L., Kucaba, T., Martin, J., Beck, C., Wylie, T., Person, B., Svaller, T., Gibbons, M., Pape, D., Harvey, N., Steptoe, M., Theising, B., Allen, M., Schurk, R., Ritter, E., Kohn, S., Shin, T., Jackson, Y., Cardenas, M., McCann, R., Wash Uzebrafish EST Project 1998
                                                                                                      /tissue_type="kidney pooled from 300 wild type adults"
/lab_host="XLOLR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Contact: Stephen L. Johnson
Washington University School of Medicine
4444 Forest Park Parkway, Box 8501, St. Louis, MO 63108, USA
TTE1: 314 288 1800
Fax: 314 286 1810
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               581
38
26
43
34
     000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length:
Matches:
Conservative:
Mismatches:
Indels:
     Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1. .581
/organism="Danio rerio"
/mol_type="mRNA"
/db xref="taxon:7955"
/clone="INAGE:4744722"
                                     Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Email: zbrafish@watson.wustl.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        High quality sequence stop: 473.
Location/Qualifiers
                                                                      US-10-718-311-4 (1-165) x CL696699 (1-753)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-718-311-4 (1-165) x BG799182 (1-581)
                                                                                                                                                                                                                                                                                          BG799182.1 GI:14163514
                                                                                                                                                                                                                                                                                                                             Danio rerio (zebrafish)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           'sex="mixed"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               zebrafish."
     100.0%
                     11.1$
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10.8
93.00
45.4
27.0
                                                                                                                                                                                                                                                            mRNA sequence.
BG799182
                                                                                                                                                                                                                                                                                                                                               Danio rerio
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alignment Scores:
                                                                                                                                                                                                                                                                        ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No.:
                                                                                                                                                                                                          LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                AUTHORS
                                                                                                                                                                         RESULT 14
                                                                                                                                                                                         BG799182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
                                                                                                      ò
                                                                                                                                       g
```

```
666 bp mRNA linear EST 07-0CT-2005
WTH001 0004_L04.r 3', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Watanabe, H., Tatarazako, N., Oda, S., Nishide, H., Uchiyama, I.,
Morita, M. and Iguchi, T.
Analysis of expressed sequence tags of the water flea Daphnia magna
Genome 48 (4), 606-609 (2005)
                                237 GCCAATAGAGACACCÁCÁGAGCAGCTGCTGATCTAGCCATAAAAGAGTTTGGCTTG 296
                                                                                                                                                                                                                                                                                                                       |||||||:::|||:::
| AGGTACTATCTAAAGAGCAATATGGAAACCGAGACGCTGTGTTCGGATGTGGAAGCACTG 476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               89 ---LeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGluLeuAlaLeu 107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        30
                                                                                                                                                                                                                                                                                        45 ThrValSer-------ValThrMetIleArgGluGlyPheVal 56
                                                                                                                                                                                                                                                                                                                                                                                     57 GluGlnAsnGluIleProGluGluLeuProLeuLeuProLys------GluSer 72
                                                                                                                                                                                            31 LeuGluAspSerMetThrLysArg-------PheGluGlnGlnGlnGlyLys 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  73 ArgTyrTrpLeuArgGluIleLeu------LeuCysAlaAspGlyGluProTrp 88
2 SerHisProAlaLeuThr ---- GinLeuArgAlaLeuArgTyrCysLysGluIlePro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Okazaki Institute for Bioscience
National Institute of Natural Sciences
Hagashiyama 5-1, Myodaiji, Okazaki, Aichi, 444-8787, Japan
Tel: 81-564-59-5237
Fax: 81-564-59-5236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Daphnia magna
Bukaryota; Metazoa; Arthropoda; Crustacea; Branchiopoda;
Diplostraca; Cladocera; Anomopoda; Daphnidae; Daphnia.
1 (bases 1 to 666)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /tissue_type="whole body"
/dev_stage="adult"
/clone_lib="Daphnia magna cDNA library"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /organism="Daphnia magna"
mol_type="mRNA"
/db_xref="taxon:35525"
/clone="WTH001_0004_L04.r"
/sex="female"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Email: watanabe@nibb.ac.jp.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Contact: Hajime Watanabe
                                                                                               20 AlaLeuAspProGlnLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BJ932163.1 GI:66942524
```

		80	356	00	380	120	410	28	70	42	30		
13 5 4 6 4 5 4 6 4 3 3		IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu	TATTGGCTTCGTGCTGCGCTT 3	81 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100		101 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe	AATAAAGTGCCTCATTCTCGTTATTACTTT 4	Asp 128	::::: 411 TAAGGATTGACAATATCTCGTAGAAACGCAAACAAACCTGGATGCAAGTTTATTTTTCC 470	GlyLeuTrpGlyArgArg 142	:::::::	53	999
Conservative: Mismatches: Indels: Gaps:	63 (1-666)	LeuLeuProLysGluSerAr	- 1	ProTrpLeuAlaGlyArgTh	TCTTCTTCAAACGGCAGGCCCTGG	LeuGlnLysLeuGlyLysTh	 AATAAAGT	Arg	 CGTAGAACGCAAACAAACC	PhelleGlulleGlyArgAspAla	 ACGGCCATGGGCAGTTCGCT	SerArgLeuArgLeuSerGlyLysProLeuLeu 153	AGTCGATTTAGTTTGTCCAGTTCACGTCCAATGCTG 5
ty: 37.5% arity: 25.9% 10.7%	US-10-718-311-4 (1-165) x BJ932163 (1-666)	eProGluGluLeuPro	312 GTTCCAGACCATATAGCTTTACTT	uCysAlaAspGlyGlu	TTCTTCAAACGGCAGG	ırGlyProGluLeuAla		121 ThrSerSerThrLeuThrArg-	AGGATTGACAATATCT	elleGlulleGlyArg	: : : : : : :	rArgleuArgleu	
Percent Similarity: Best Local Similarity: Query Match: DB:	-718-311-4	61 11	312 GT	81 Le	357 TC	101 Se	381	121 Th	411 TA	129 Ph	471 TT	143 Se	531 AG
Percel Best 1 Query DB:	US-10	ò	ą	ò	qq	ò	q	ò	qq	ò	qa	ờ	qq

Search completed: May 30, 2006, 04:08:20 Job time : 4262.96 secs

ì

```
Continuation (42 o Continuation (52 o Continuation (52 o Continuation (43 o Continuation (48 o Continuation (48 o Continuation (48 o Continuation (48 o Continuation (49 o Continuation (40 o Continuation (41 o Continuation (42 o Continuation (42 o Continuation (43 o AEGORGES Salmonell AR384505 Sequence M13543 Tomato (L.e.
                                                                                                                                                                                                                                                                                                                                                                                                                                                         PAT 18-DEC-2003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                            BT013023 Lycopersi
X05983 Tomato rbcS
X69759 S.tuberosum
AY220079 Nicotiana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Unclassified.

Unclassified.

(bases 1 to 684)

Flint,D., Meyer,K. and Viitanen,P.

Sinapoylglucose:malate sinapoyltransferase form malate conjugates
from benozic acid glucosides
Fatent: US 642036-A 16 04-NOV-2003;
E. I. Du Pont de Nemours and Company; Wilmington;
WOX;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
             AX329364 Sequence
AX382254 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGAGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 684;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100.0%; Score 684; DB 2; Length 6
100.0%; Pred. No. 6.8e-202;
ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                          linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                         DNA
                                                                                                                                       AE005674 43
AE014073_34
AE014073_34
AE014013_34
AE014013_42
AE017220_43
CP000026_42
AL627282
AL627282
AR384505
TOMRBCSB
TOMRBCSB
BT013023
LERBCS2
STRECS1
AY220079
LERBCS3B
                                                                                                                                                                                                                                                                                                                                                                                                                                                       AR428736 684 bp
Sequence 16 from patent US 6642036.
AR428736
                                     CP000036 41
AE005174 51
BA000007 50
BA0000034 42
CP000038 44
AE014075 47
                                                                                                                                                                                                                                                                                                                                                                                         ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1. 684
/organism="unknown"
/mol_type="genomic DNA"
             AX329364
AX382254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AR428736.1 GI:40188466
                                        115
115
115
115
2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches 684; Conservative
 495
495
495
110000
                                                 110000
110000
110000
110000
110000
110000
                                                                                                                                            110000
110000
23880
110000
                                                                                                                                                                                                           110000
110000
234050
                                                                                                                                                                                                                                                     645
599
742
1097
2776
3323
806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
Unknown.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Unknown.
 495
495
495
495
490
                                                                                                      44888.4
4485.2
4481.2
44481.2
4448.8
3320.8
3319.2
3319.2
3319.2
3319.2
                                                                                                                                                                                                                                                    282
184
184
184
179
146.8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                       LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 1
AR428736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
 ORIGIN
                                        υ
                                                                                          υ
                                                                                                                                              U
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AR428736 Sequence
AX329368 Sequence
AX328228 Sequence
AR144789 Sequence
AR144789 Sequence
M95268 Escherichia
E11274 ubiC and ub
M93136 Escherichia
X57434 E.coli ubiC
X66619 E.coli gene
AR14789 Sequence
Continuation (43 o
Continuation (43 o
Continuation (43 o
U00006 E. coli chr
DQ087228 Escherich
A7932 Sequence
                                                                                                  (without alignments)
10673.508 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Description
                                                                                                                                                                     1 atggettectetgteattte......eggegteaeegttgtaetaa
                                                                                    May 30, 2006, 01:01:59; Search time 4098 Seconds
                                                                                                                                                                                                                                                                12732272
           GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd
                                                                                                                                                                                                                                                            Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                    6366136 segs, 31973710525 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ECUBI
AR144789
U00096 42
AP009048 42
ECOUW89
DQ087228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2 AR428736
3 AR428412
AX329368
AX329368
AX329368
AX329368
AX329368
AX329368
ECOUBIA
ECOUBIA
ECOUBIALS
ECOUBIALS
                                                                                                                                                                                                                                                                                                                               Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                             nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A47932
AR428733
                                                                                                                                                                                            IDENTITY NUC Gapoxt 1.0
                                                                                                                                                                                                                                                                                         seq length: 0
seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15
15
15
2
                                                                                                                                      US-10-718-311-7
684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             BB
                                                                                                                                                                                                                                                                                                                                                                                                 9b_env.;
9b_pat.;
9b_pat.;
9b_pr.:,
9b_ro.:,
9b_vi.;
9b_nr.;
9b_nr.;
9b_nr.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           684
1854
2000
2000
2000
2000
110000
110000
176195
495
                                                                                                                                                                                                                                                                                                                                                                                     GenEmbl:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1000.0
1
                                                                                                                                                                                                                                                                                                                                                                                                                                                      5:
6:
7:
9:
10:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Title:
Perfect score:
                                                                                                                                                                                              Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       08
08
08
                                                             OM nucleic
                                                                                                                                                                     Sequence:
                                                                                                                                                                                                                                    Searched:
                                                                                                                                                                                                                                                                                                                                                                                      Database
                                                                                                                                                                                                                                                                                                    Maximum
                                                                                                                                                                                                                                                                                         Minimum
                                                                                     Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ģ
```

N

360 360

420 420

480 480 540 540 9 600 9 9

g

ઠે

셤

õ

셤 õ g ઠે 셤 ઠે 셤 ò 요 ઠ g

ð

```
08-JAN-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTTGAACAGCAGGAAAAACGGTAAGCGTGACGATGATCCCCGAAGGCTTTGTCGAGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Meyer,K., van Dyk,D.E. and Viitanen,P.V.
High level production of p-hydroxybenzoic acid in green plants
Patent: WO 0194607-A 7 13-DEC-2001;
E.I. Dupont De Nemours (US)
Location/Qualifiers
1. 684
                                                                                                    TITGAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGGAAGGGTTTGTCGAGCAG
                                                                                                                                                                              ATTTTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCA
                                                                                                                                                                                                                                        ATTTTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGCC
                                                                                                                                                                                                                                                                              ACGTTAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAGGCCGTTAGGACGCCTAT
                                                                                                                                                                                                                                                                                              ACGTTAAGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAAACGCCGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                    CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                         1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAGTATACACAAGCT
                                                                                                                                                               AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                   TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGGTGTTGCTAACAGAACTGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                              TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 ATGCCTTCCTCTCTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 684;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indele
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
100.0%; Score 684; DB 2; I
Best Local Similarity 100.0%; Pred. No. 6.8e-202;
Matches 684; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /organism="synthetic construct"
/mol type="unassigned DNA"
/db_xref="taxon:32630"
/noce="synthetic CPL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    synthetic construct
synthetic construct
other sequences; artificial sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 7 from Patent W00194607. AX329368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AX329368.1 GI:18102367
                                                                                                                                301
                                                                                                                                                                                                                                                                                                          481
                                                                                                                                                                                          361
                                                                                                                                                                                                                       421
                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                              481
                                                                                                                                                             361
                                                                                                                                                                                                                                                                                                                                                                                                   601
                                                                                                                                                                                                                                                                                                                                                                                                                              601
                181
                                                                                                    301
                                                                                                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                                                                                                                                                                                           661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AX329368
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
                                                                g
                                                                                                                               셤
                                                                                                                                                                                    g
                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                   à
                                                                                                 ò
                                                                                                                                                         ઠે
                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                       õ
                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          업
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PAT 20-FEB-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                       360
                                                                                                                                                                           420
                                                                                                                                                                                                                                     480
                                                                                                                                                                                                                                                                 540
                                                                                                                                                                                                                                                                                                                                                     900
                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                               420
                                                                                                                                                                                                         480
                                                                                                                                                                                                                                                                                              540
                                                                                                                                                                                                                                                                                                                           600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          180
                                                                                                                  TTTGAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG 360
                                                                                                                                                                                                                                                                                                                                                                                                               99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATC 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATC
                                                  ATTTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCA
                                                                                                                                                                                                                                                                 ACGTTAAGCGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                ACGTTAAGCGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAACGCCGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                            CTGTTCRCATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCCTGTTACAAAGAAG
                                                                                       TTTGAACAGCGAAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG
                                                                                                                                              AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                                        ATTITIGITATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCA
                                                                                                                                                                                                                                                                                                                         CTGTTCACATCATCACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                  TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT
                                                                                                                                                                                                                                                                                                                                                                                                   TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAACAGAACTGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ATGCCTCCTCTGTCATTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               plants
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JM Unknown.

JM Unknown.

JE 1 (bases 1 to 684)

JR Meyer, K., Vittanen, P.V. and Van Dyk, D.E.

High level production of p-hydroxybenzoic acid in green plar

HAL Patent: US 6683231-A 7 27-JAN-2004;

E. I. du Pont de Nemours and Company; Wilmington, DE

Location/Qualifiers

G84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 684; DB 2; Length 684; Pred. No. 6.8e-202;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AR455412 684 bp
Sequence 7 from patent US 6683231.
AR455412
                                                                                                                                                                                                                                                                                                                                                                                                                                         TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AR455412.1 GI:42689960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Best Local Similarity 100.
Matches 684; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Unknown.
181
                             241
                                                       241
                                                                                     301
                                                                                                                 301
                                                                                                                                              361
                                                                                                                                                                           361
                                                                                                                                                                                                        421
                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                                                                                     541
                                                                                                                                                                                                                                                                                                                                                                                  601
                                                                                                                                                                                                                                                                                                                                                                                                               601
                                                                                                                                                                                                                                                                                                                                                                                                                                            661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LOCUS
DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 2
AR455412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORIGIN
```

ö

9 9

à,

g

ઠ

g ò g

ઠે

	OY 661 TTACCGGCGTCACCGTTGTACTAA 684 Db 661 TTACCGGCGTCACCGTTGTACTAA 684 RESULT 5 AR144788 LOCUS AR144788 LOCUS AR144788 AR144788 VERSION AR144788	Query Match 72.8%; Score 498; DB 2; Length 854; Query Match Similarity 100.0%; Pred. No. 9.5e-144; Matches 498; Conservative 0; Mismatches 0; Indels 0; Gaps 0; Qy 187 ATGTCACCCCGCGTTAACGCAGCGGCGCGCGCTATTGTAAAGGATCCCTGCC 246
Db 121 CAAAACCTTGACATCCATTGCTAGCAATGGTGAAGATTAGCTGCATGCA	RESULT 4 AX382258 LOCUS ACRESION AX382258 AX382258 ACCESSION AX382258 VERSION AX382258 ACRESION AX382258 ACRESION AX382258 ACRESION AX382258 AX382258 COURCE ORGANISM Synthetic construct ORGANISM Synthetic construct ORGANISM COURT Sequences; artificial sequences. TITLE AUTHORS FINt, D., Meyer, K. and Viitanen, P.V. TITLE AUTHORS FINT Sinapolyglucose; analate sinapolyltransferase form malate conjugates from benozic acid glucosides JOURNAL BI. DUPONT DE NEWOURS AND COMPANY (US) E.I. DUPONT DE NEWOURS AND COMPANY (US) BI. ORGANISM ADDATHORS ADDATHORS ADDATHORS FEATURES 1. 684 ADDATHORS ADDATH	Matches 684; Conservative 0; Mismatches 0; Indels 0; Gaps 0; Matches 684; Conservative 0; Mismatches 0; Indels 0; Gaps 0; Qy 1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACGCAGCAATGTTACACAAGCT 60

g

셤 ò g ò q õ

ò

6 B a ò ద δ q

```
/translation="RFSEVNFDTQQMIDFINRFNTNKWLIDKNNNFFIQLIDQALRST
DDMIKANVWHLYKEWIRSDDVSPIFIETEDNLRTFNTNELTRNDNIFILFSSVDGFV
MVVSSQRLHDMLNPTKDTNWNSTYIYKSRHEMLPVNLTQETLFSSKSHGKYALFPIFT
                                                                                                                                                                                                                                                          /translation="wshPaltQlralryckelPaldDQLldwllledSmtkrFEQQGK
TVSVTMIREGFVEQNEIPEELPLLPKESRYWLREILLCADGEPWLAGRTVVPVSTLSG
PELALQKLGKTPLGRYLFTSSTLTRDFIEIGRDAGLWGRRSRLRLSGKPLLLTELFLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /tränslation="MEWSLTQNKLLAFHRLMRTDKPIGALLLLWPTLWALWVATPGVP
QLWILAVFVAGVWLMRAAGCVVNDYADRKFDGHVKRT"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           987 riargraccearderdaaccerdecridecegreeraccercerrecreteracerra 1046
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    998
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           926
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       909
                                                                                                                                                                                                                                                                                                                                                                                                            be found in entry
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1107 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1167 CGACGTTCCCCCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTTGCTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              607 CGACGITCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
/transl_table=11
/product="4-hydroxybenzoate-octaprenyl transferase"
/protect="4-hydroxybenzoate-octaprenyl transferase"
/db_xref="GI:347889"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1498;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                          /note="The last part of this ORF is to K00127.; ORF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 Similarity 100.0%; Score 498; DB 15; L Similarity 100.0%; Pred. No. 1.1e-143; B8; Conservative 0; Mismatches 0;
                                                                                                                         747. .1244

/gene="ubic"

/codon start=1

/transl table=11

/product="chorismate lyase"

/protein_id="AAA17027.1"

/db_xref="GI:347888"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1227 GCGTCACCGTTGTACTAA 1244
                                                         ASWRAHRIMNKGV"
                                                                                                                                                                                                                                                                                                                                 1257. .1498
/gene="ubiA"
1257. .>1498
/gene="ubiA"
                                                                                                             "gene="ubiC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCGTCACCGTTGTACTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches 498;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     807
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       667
                                                                         RBS
gene
                                                                                                                                                                                                                                                                                                                                         gene
                                                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ECOUBIA 11498 bp DNA linear BCT 28-MAR-1994 Escherichia coli 4-hydroxybenzoate octaprenyl transferase (ubiA) gene, 5'end and chorismate lyase (ubiC) gene, complete cds.
                                                                                                                                                                                                                                                                                                                                                        680
                                                                                                                                                                                                                                                                                                                                                                                         909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       800
                                                                                                                                                                   426
                                                                                                                                                                                                        560
                                                                                                                                                                                                                                            486
                                                                                                                                                                                                                                                                               620
                                                                                                                                                                                                                                                                                                                    546
                                                                                                                                                                                                                                                                                                                                                                                                                             740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Escherichia coli

Bacherichia coli

Bacteria: Proteobacteria; Gammaproteobacteria; Enterobacteriales;

Enterobacteriaceae; Escherichia.

1 (bases 1 to 1498)

10, G., Williams,H.D., Gibson,F. and Poole,R.K.

Mutante of Escherichia coli affected in respiration: the cloning

and nucleotide sequence of ubiA, encoding the membrane-bound

bydroxybenzoate:octaprenyltransferase

J. Gen. Microbiol. 139 (Pt 8), 1795-1805 (1993)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /tissue_lib="cosmid"
<1. 524
/note="NOR; the sequence before nucleotide number 110
might not be genuine. Three ClaI sites, which is the
enzyme used for cloning, were identified in this region,
so it could be a cloning artifact"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          M96268.1 GI:347886
4-hydroxybenzoate octaprenyl transferase; aerobic respiratory
deficiency; chorismate lyase; membrane-bound protein;
prenyltransferase; transferase; ubiA gene; ubiC gene; ubiquinone
biosynthesis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTAACCG
                                      CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                           ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAATTTTG
                                                                                                                                                                                                                                                                TTATGLECCGATGGTGAACCGTGGCTTGCCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                         AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                    ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGACGTICCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                 ATCCCCGAAGAACTGCCGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                          AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                         ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1. .1498
/organism="Escherichia coli'
/orj Lype="unassigned DNA"
/strain="K-12"
/db_xref="taxon:562"
/map="91.8 min"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon_start=3
/transl_table=11
/protein_id="AAA17026.1"
/db_xref="GI:347887"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          M96268
                                                     381
                                                                                          307
                                                                                                                               441
                                                                                                                                                                 367
                                                                                                                                                                                                      501
                                                                                                                                                                                                                                          427
                                                                                                                                                                                                                                                                               561
                                                                                                                                                                                                                                                                                                                  487
                                                                                                                                                                                                                                                                                                                                                    621
                                                                                                                                                                                                                                                                                                                                                                                         547
                                                                                                                                                                                                                                                                                                                                                                                                                             681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bource
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ECOUBIA
```

ö

```
Chaese 1 to 2000)
Nichols,B.P. and Green,J.M.
Cloning and Sequencing of Escherichia coli ubiC and purification of chorismate lyase
Unpublished (1992)
Original source text: Bscherichia coli (sub_strain W3110, strain K-12) (library: Kohare lambda-1F8) DNA.
Location/Qualifiers
1. .2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /codon start=1
/transI table=11
/product="chorismate lyase"
/protein_id="AAA24711.1"
/db_xref="G1:148100"
/tb_xref="G1:148100"
/translation="MSHPALTQLRALRYCKEIPALDPQLLDWLLLEDSMTKRFEQQGK
TVSVTWIREGFVEGNEIPEELLERESRYWLREILLCADGEPWLAGRTVVPVSTLSG
PELALQKLGKTPLGRSTLTRDFIEIGRDAGLWGRRSRLRLSGKPLLLTELFLP
                                                                                                                                                                                                                                       ECOUBICA 2000 bp DNA linear BCT 26-APR-1993 Escherichia coli chorismate lyase (ubiC), 4-hydroxybenzoate octaprenyl transferase (ubiA) genes, complete cds, and sn-glycerol-3-phosphate acyltransferase (plsB) genes, 3' end.
  999
                       800 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTAACCG 859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /experiment="experimental evidence, no additional details
recorded"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             no additional details
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteria, Protechacteria, Gammaprotechacteria, Enterobacteriales,
Enterobacteriaceae, Escherichia,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                380...877
/gene="ubiC"
/function="enzymatic chorismate --> p-hydroxybenzoate +
                                                                                                                                                                                                                                                                                                                                                                            4-hydroxybenzoate octaprenyl transferase; chorismate lyase; plsB
gene; sn-glycerol-3-phosphate acyltransferase; ubiA gene; ubiC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 of Escherichia coli
  CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /function="enzymatic - 3-octaprenyl-4-hydroxybenzoate
gynthesis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 (bases 1 to 2000)
Lightner, V.A., Bell, R.M. and Modrich, P.
The DNA sequences encoding plas and dgk loci (3. Biol. Chem. 258 (18), 10856-10861 (1983)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /experiment="experimental evidence, recorded"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     coli W3110"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  lib="Kohare lambda-1F8"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /organism="Escherichia cc
/mol_type="genomic DNA"
/strain="K-12"
/sub_strain="W3110"
/db_xref="taxon:316407"
/map="91.8 min"
/tissue_lib="Kohare lambd
                                                                                                               860 GCGTCACCGTTGTACTAA 877
                                                                                     684
                                                                                                                                                                                                                                                                                                                                                                                                                                               Escherichia coli W3110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Escherichia coli W3110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               890. .1762
/gene="ubiA"
890. .1762
/gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         citation=[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="ubic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /citation=[2]
                                                                                     667 GCGTCACCGTTGTACTAA
                                                                                                                                                                                                                                                                                                                                                         M93136.1 GI:148099
607
                                                                                                                                                                                                                                                               DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORGANISM
                                                                                                                                                                                                                                                                                                                             ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PUBMED
REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                              RESULT 8
ECOUBICA
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                               SOURCE
                                     a
                                                                                                                        셤
                                                                                   ò
ઠે
                                                                                                                                    Scherichia coli

Escherichia coli

Bacteria, Proteobacteria, Gammaproteobacteria, Enterobacteriales,
Enterobacteria coli

Bacteria, Proteobacteria, Gammaproteobacteria, Enterobacteriales,
Enterobacteriaces, Escherichia.

I (bases 1 to 2000)

Mateuda, H. Kawamuki, M. and Nakagawa, T.
PRODUCTION OF UBIQUINONB-10

ALPHA- SHOKUHIN KK

OS Bacherichia coli

PO 30 Carboro 1994273071

PD 30-ARF-1996

PP 13-OCT-1994 JP 1994273071

PR MATSUDA HIDETUKI, KAWAMUKI MAKOTO, NAKAGAWA TSUYOSHI PC

C12N15/09, A61K31/12, A61K31/12, C07H21/04, C12N1/21, C12P7/66, PC

(C12N1/21, 01), (C12P7/66, C12R1:01);

CC Strandedness: Double;

CC Strandedness: Double;

CC Strandedness: Double;

CC Strandedness: Double;

FT Source /organism='Bscherichia coli'
FT Source /Organism='Bscherichia coli'
FT CDS /Product='Ubic protein'
FT CDS /Product='Ubic Protein'
FT CDS /Product='UbiA protein'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                       PAT 29-SEP-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  247 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAACGTTTTGAA 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        440 CTGGATCCGCAACTGCTCGACTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       307 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     427 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTTCCTGTGTCAACGTTA 486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               367 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG 426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               680 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC 739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          740 ACATCATGGACATTAACCCGGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG 799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                547 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCCGGGCTGTGTGGGGGG 606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         500 CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           560 ATCCCCGAAGAACTGCCGCTGCTGCTGGAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           487 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              72.8%; Score 498; DB 2; Length 2000; ilarity 100.0%; Pred. No. 1.2e-143; Conservative 0; Mismatches 0; Indels
                                       linear
                                         DNA

    .2000
    /organism="Bscherichia coli"
/mol_type="genomic DNA"
    /db_xref="taxon:562"

                                       2000 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                      E11274.1 GI:22024916
JP 1996107789-A/1.
                                                            ubic and ubiA gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Samma
Matches 498;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                                                     DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    source
                                                                                                                                                                                                                                   REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                    COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORIGIN
```

셤

ŝ 셤 ò

셤 ò a ò g ò 임

ઠે

coli

strain

```
2 (bases 1 to 2000)
Nichols, B.P. and Green, J.M.
Cloning and sequencing of Escherichia coli ubiC and purification of chorismate lyase
J. Bacteriol. 174 (16), 5309-5316 (1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /translation="mshpalttqlralryckeipaldpolldmilledsmtkrfedqgk
TVSVTMIREGFVEQNEIPEELPLLPKESRYMLREILLCADGEPWLAGRTVVPVSTLSG
PELALQKLGKTPLGRYLFTSSTLTRDFIEIGRDAGLWGRRSRLRLSGKPLLLTELFLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /procein_id="AAA24717.1"

db_xref="G1:148108"

/db_xref="G1:148108"

/translation="WRMSLTONDYADRKFDGHVKRTANRPLPSGAVTEKBRALBVV

QLWILANFVAGVWLMRAAGCVVNDYADRKFDGHVKRTANRPLPSGAVTEKBARALFVV

LVI.15FLLUTLTLNTWTILLSTAALALAWVYPPRWRYTHLPGVVLGAAFGGNSIPWAFAA

VSESVPLSCWLMFLANILASYAPTOYAMVDRDDDVKIGIKSTALIEGQYDKLIGILIGIL

QIGVLALMATIGELANILANILANYAYDTOYAMVBLDDVKIGIKSTALIEGGYDKLIIGIL

QIGVLALMATIGELMANILANILANYAYDTOYAMV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 no additional details
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        note="N-terminal amino acid sequence of chorismate lyase
.NH2-SHPALTQLRALRYCEIPAL-"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'experiment="experimental evidence, no additional details
                                                                                                                                                                                                              Gammaproteobacteria; Enterobacteriales;
                                                                                                    4-hydroxybenzoate octaprenyl transferase; chorismate lyase; plsB
gene; sn-glycerol-3-phosphate acyltransferase; ubiA gene; ubiC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="ubiC"
/function="enzymatic chorismate --> p-hydroxybenzoate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /function="enzymatic - 3-octaprenyl-4-hydroxybenzoate
synthesis"
gene complete cds, chorismate lyase (ubiC) gene complete cds,
sn-glycerol-3-phosphate acyltransferase (plsB) gene, 3' end.
M93413
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /codon start=1
/transl_table=11
/product="4-hydroxybenzoate-octaprenyl transferase"
                                                                                                                                                                                                                                                                                               of Escherichia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (sub_strain W3110,
                                                                                                                                                                                   Escherichia coli Willo
Bacteria, Proteobacteria, Gammaproteobacteria
Enterobacteriaceae, Escherichia.
Enterobacteriaceae, Escherichia.
Lightner, V.A., Bell, R.M. and Modrich, P.
The DNA sequences encoding plsB and dgk loci
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 'experiment="experimental evidence,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        coli W3110"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Original source text: Escherichia coli
K-12) (library: Kohara lambda) DNA.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /citation=[2]
/codon_start=1
/transl_table=11
/product="chorismate lyase"
/protein_id="AAA2416.1"
/db_xref="GI:148107"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /tissue_lib="Kohara lambda"
380. .877
/gene="ubiC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /mol_type="genomic DNA"
/strain="K-12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /sub_strain="W3110"
/db_xref="taxon:316407"
/map="91.8 min"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      organism="Escherichia"
                                                                                                                                                                  Escherichia coli W3110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  citation=[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              390. .1762
/gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .1762
                                                                                   M93413.1 GI:148106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'number=2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               pyruvate"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 recorded
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bource
                                                                                                                                                                    SOURCE
ORGANISM
                                                                                                                                                                                                                                                   REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                  JOURNAL
PUBMED
REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                               ACCESSION
                                                                                 VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                             JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMMENT
                                                                                                                                            QLWILAVFVAGVWLMRAAGCVVNDYADRKFDGHVKRTANRPLPSGAVTEKEARALFVV
ULISFLLUTLUTHNTILLSIAALAMVYPFWKRYTHLPQVVLGAAFGWSIPMAFAA
VSESYPLSCWLMFLNILWAVAYDTQYAMVDRDDDVKIGIKSTAILFGQYDKLIIGIL
OIGVLALMAIIGELNGLGWGYYWSILVAGALFVYQQKLIANRREREACFKAFMNNYVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ECOUBIPLS 2000 bp DNA linear BCT 26-APR-1993 Escherichia coli 4-hydroxybenzoate octaprenyl transferase (ublA)
                                                                                                                          'translation="MEWSLTQNKLLAFHRLMRTDKPIGALLLLWPTLWALWVATPGVP"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                /gene="plsB"
/EC_number="2.3.1.15"
/function="lysophosphatidic acid synthesis"
/experiment="experimental evidence, no additional details
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATCCCCGAAGAACTGCCGCTGCTGCTGCCGAAAGAGTTACTGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAAAGCCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATGTCACACCCCCCCCTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGAGTCCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGGAAGGGTTTGTCGAGCAGCAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           547 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTTACGGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                       /transI_table=11
product="4-hydroxybenzoate-octaprenyl transferase"
protein id="AhA24112.1"
db_xref="GI:148101"
                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1
|transl_table=11
|product="sn-glycerol-3-phosphate acyltransferase"
|protein id="AAA24713.1"
|db_xref="GI:148102"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match 72.8%; Score 498; DB 15; Length 2000; Best Local Similarity 100.0%; Pred. No. 1.2e-143; Matches 498; Conservative 0; Mismatches 0; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    translation="MKVYQLLAELITSDVRLTIESATQGEG"
                                                                                                                                                                                                                                                   complement (1917. .2000)
/gene="plsB"
complement (1917. .2000)
                                                                                                                                                                                                                                 LVLFLGLAMSYWHF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCGTCACCGTTGTACTAA 877
                                                                                                                                                                                                                                                                                                                                                                                                                         citation=[1]
                                                                                                                                                                                                                                                                                                                                                                                                   recorded
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ECOUBIPLS
LOCUS
DEFINITION
                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ଚ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
```

```
/geneart=1
/codon start=1
/transI_table=11
/product="4"-yydroxybenzoate octaprenyltransferase"-
/product="4"-yydroxybenzoate octaprenyltransferase"-
/protein id="CAA40682.1"
/db_xref="G1;4323"
/db_xref="G1phrotkB/Suiss-Prot:P26601"
/db_xref="G0phrotkB/Suiss-Prot:P26601"
/db_xref="G0phrotkB/Suiss-Prot:P26601"
/db_xref="G0phrotkB/Suiss-Prot:P2601"
/db_xref="G1phrotkB/Suiss-Prot:P2601"
/db_xref="G1phrotkB/Suiss-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product="4-hydroxybenzoate synthetase"
/protein_id="CAA40681.1"
/db_xref="GI1:43234"
/db_xref="GOA; P26602"
/db_xref="GOA; P26602"
/db_xref="GOA; P26602"
/db_xref="HoiProtKB/Swiss-Prot:P26602"
/db_xref="HoiProtKB/Swiss-Prot:P2602"
/db_xref="HoiProtKB/Swiss-P2602"
/db_xref="HoiProtKB/Swiss-P2602"
/db_xref="HoiProtKB/Swiss-P2602"
/db_xref="Hoi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         641
                                Escherichia coli
                                                                                                                         2 (bases 1 to 2034)
Mathaura, K.
Direct Submitseion
Submitted (28-JAN-1991) K. Nishimura, Faculty of Sciences, Kyoto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           462 CTGGATCCGCAACTGCTCGACTGCTGTTTTCTTGCTGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAGCAGGAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            522 CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 2034;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                    Å
Nishimura, K., Nakahigashi, K. and Inokuchi, H. Location of the ubiA gene on the physical map Bacteriol. 174 (17), 5762 (1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               72.8%; Score 498; DB 15; L
100.0%; Pred. No. 1.2e-143;
ive 0; Mismatches 0;
                                                                                                                                                                                                                                                       University, Sakyo-ku, Kyoto 606, Japan
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                     /db xref="taxon:562"
/map="91.7 min"
/clone="634"
/clone lib="Kohara library"
137. .142
291. .899
/gene="ubiC"
/gene="ubiC"
                                                                                                                                                                                                                                                                                                                                            /organism="Escherichia coli"
/mol_type="genomic DNA"
/strain="K12 W3110"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        912. .1784
/gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   912. .1784
/gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity 100.
Matches 498; Conservative
                                                                                                                                                                                                                                                                                                                     1. .2034
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         -35_signal
-10_signal
gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   307
                                                                                                                                                                                                                                                                                                                        source
                             TITLE
JOURNAL
PUBMED
                                                                                                                         REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gene
   AUTHORS
                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BCT 05-0CT-1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      246
                                                                                                                                                                                                        /experiment="experimental evidence, no additional details recorded"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           499
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        559
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                619
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   799
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                859
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         X57434.1 GI:43233
4-hydroxybenzoate octaprenyl transferase; 4-hydroxybenzoate
synthetase; chorismate lyase.
Secherichia coli
Escherichia coli
Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTGGATCCGCAACTGCTCGACTGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATCCCCGAAGAACTGCCGCTGCTGCAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        620 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTCACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  credarceccacrecrescrescrescrescrescrescrescrescrazacerrrrgaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        500 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                       /citation=[1]
/codon start=1
/broduct="sn-glycerol-3-phosphate acyltransferase"
/product="sn-glycerol-3-phosphate acyltransferase"
/protein_id="AAAA418.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  72.8%; Score 498; DB 15; Length 2000; 100.0%; Pred. No. 1.2e-143; ive 0; Mismatches 0; Indels 0
                                                                                                                      /gene="plsB"
/BC_number="2.3.1.15"
/function="lysophosphatidic acid synthesis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           E.coli ubiC and ubiA genes for chorismate lyase and 4-hydroxybenzoate octaprenyltransferase.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         translation="MKVYQLLAELITSDVRLTIESATQGEG"
                       complement (1917. .2000)
/gene="plsB"
complement (1917. .2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               684
LVLFLGLAMSYWHF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       860 GCGTCACCGTTGTACTAA 877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCGTCACCGTTGTACTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity
Matches 498; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 10
ECUBIAC
                                gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VERSION
KEYWORDS
                                                                                        CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORIGIN
```

셤

ઠે g ò

유

ò

g

ઠ

g

ò

a ઠે g ò

ò

셤

ò g

g

셤

ઠે

셤 ò 셤 ઠે ద

ò

```
/db_xref="COA:P26601"
/db_xref="COA:P26601"
/db_xref="COA:P26601"
/db_xref="UniProtKB/Swiss-Prot:P26601"
/db_xref="UniProtKB/Swiss-Prot:P26601"
/translation="MRWSLTQNKLLAFRRLMRTDRFPGVP
/Lranslation="MRWSLTQNKDADRKPGHVKRTANRPLPSGNTEKBARALFVV
LVLISFLUVTLNTWTLLSIAALALAWVYPPRKRYTHLPQVVLGAARGWSIPWARAA
VSESVPLSCWLMFLANILMAVAYDTQYAMVDRDDDVKIGIKSTAILFGQYBKLIGGI
LVLFGLAMASYWHF"
/gene="ubiA"
/gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PAT 08-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      809
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          869
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            929
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              989
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CTGGATCCGCAACTGCTCGACTGCTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          630 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAGCAGGAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                690 caccaccaaaaacccraaccracarcarcccccaacccrricrccaccaacaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        750 ATCCCCGAAGAACTGCCGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            810 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            487 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                     /producE="4-hydroxybenzoate-octaprenyl transferase"
/protein id="CAA7182.1"
/db_xref="GI:43232"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 2348;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       linear
                                                                                                                                                                                                                                                                                                                                                                                                                                             72.8%; Score 498; DB 15; L 100.0%; Pred. No. 1.2e-143; vative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AR144789 6641 bp D
Seguence 25 from patent US 6210937.
AR144789
                                                                                                                                                                                                                                                                                                                                             /bound_moiety="polyprenyl"
1965. .1989
                                                                                                                                                                                                                                                                                                                                                                                              /note="palindrome"
                                                 1080. .1952
/gene="ubiA"
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1050 GCGTCACCGTTGTACTAA 1067
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCGTCACCGTTGTACTAA 684
                                gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 100.
Matches 498; Conservative
                                                                                                                                                                                                                                                                                                                                                                                repeat_region
                                                                                                                                                                                                                                                                                                             misc_binding
                                                                                                                                                                                                                                                                                                                                                                terminator
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      307 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 12
AR144789
LOCUS
DEFINITION
ACCESSION
RBS
gene
                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                  ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        è
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales; Enterobacteriales; Enterobacteriaces; Escherichia.

1 (Dases 1 to 2148)
Siebert,M., Bechthold,A., Melzer,M., May,U., Berger,U., Schroder,G., Schroder,G., Severin,K. and Heide,L.
Ubiquinone biosynthesis. Cloning of the genes coding for chorismate pyruvate-lyase and 4-hydroxybenzoate octaprenyl transferase from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /db_xref="GOA:P26602"
/db_xref="GOA:P26602"
/db_xref="UniProtKB/Swiss-Prot:P26602"
/translat-inn="MSHPALTQLRALRYCKEIPALDPQLLDWLLLEDSMTKRFEQQGK
TVSTWINTRGFVEORIPEEDELPKESRYWIREILL/CADGEPWLAGRTVVPYSTLSG
PELALQKLGKTPLGRYLFTSSTLTRDPIBIGRDAGLWGRRSRLRLSGKPLLTEEFPP
                                                                                                                                                                                                                                                                                                                                                                                              09-SEP-2004
                                                                                                                                                                                                         999
                                                                                                                                     909
                                                                                                                                                                     821
                                                                                                                                                                                                                                         881
                                                                                                                                                                                                                                                                                                                                                                                                                               X66619.1 GI:43230
4-hydroxbenzoate-octaprenyltransferase; chorismate-pyruvate lyase;
ubiA gene; ubiC gene.
Bscherichia coli
Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Direct Submission
Submitted (04-JWN-1992) L. Heide, Inst of Pharmaceutical Biology,
Schaenzlestrasse 1, 7800 Freiburg, FRG
On Sep 24, 2004 this sequence version replaced gi:253104.
See also K00127, M93136 & M93413.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /clone lib="Sau3A partial digested DNA in pBluescript"
558. .563
570. .1067
570. .1067
570. .1067
                                                                                                     AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                         ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGTGGGGGG
                                                                                                                                                                                                                         CGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                   TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCCTGCTGTCTCAACGTTA
                                                                                                                                     ACATCATCGACATTAACCCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                         CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                              BCT
                                                                                                                                                                                                                                                                                                                                                                                              linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /codon_start=1

transl_table=11

product="chorismate-pyruvate lyase"

protein_id="CA447181.1"

/db_xref="GI:43231"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1. .2348
/organism="Escherichia coli"
/mol_type="genomic DNA"
/strain="WC410"
/db_xref="taxon:562"
/map="91.8 mins"
                                                                                                                                                                                                                                                                                                                                                                                                DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEBS Lett. 307 (3), 347-350 (1992)
1644192
                                                                                                                                                                                                                                                                                                                                                                                         E.coli genes ubiC and ubiA.
X66619 S41687
X66619.1 GI:43230
                                                                                                                                                                                                                                                                                             GCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   clone="pALMUI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   570. .1067
/gene="ubic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (bases 1 to 2348)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Escherichia col:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Heide, L.
                                 642
                                                                   487
                                                                                                   702
                                                                                                                                     547
                                                                                                                                                                       762
                                                                                                                                                                                                         607
                                                                                                                                                                                                                                         822
                                                                                                                                                                                                                                                                           667
                                                                                                                                                                                                                                                                                                                                                                                                               DEFINITION
ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JOURNAL
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RBS
gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AUTHORS
                                                                                                                                                                                                                                                                                                                                                              RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOURCE
```

σ

```
Continuation (43 of 47) of U00096 from base 4200001 (U00096 Escherichia coli K-12 MG165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      80709 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG 50768
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  50769 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTAACGTTA 50828
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                307 CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAAGAATGAA 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          50589 CTGGATCCGCAACTGCTCGACTGGCTGTTGTTGTAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           80829 AGCGGGCCGGAGCTGCGTTACAAAATTGGGTAAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       427 ITAIGIGCCGAIGGIGAACCGIGGCIIGCCGGGICGIACCGICGIICCIGIGICAACGIIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AGCGGCCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                547 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 110000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                72.8%; Score 498; DB 15; Length 1 100.0%; Pred. No. 3e-143; ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                  4410000
4510000
4610000
                                                                                                                                                                                                                                                                                                 3310000
3410000
3510000
3610000
                                                                                                                                                                                                                                                                       3110000
                                                                                                                                                                                                                                                                                                                                                                                              4010000
                                                                                                                                                                                                                                                                                                                                                                                                                         4210000
                                                                                                                                                                                                                                                           3010000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          4639675
                                                                                                                                                                                                                                                                                                                                                                                              3900001
4000001
4100001
4200001
                                                                                                                                                                                                                                                                                                                                                                                                                                                 4300001
4400001
4500001
                                        1300001
1400001
1500001
1600001
                                                                                                                                                                                                                                                                       3000001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match 72.8
Best Local Similarity 100.
Matches 498; Conservative
  000096 11
000096 11
000096 13
000096 13
000096 14
000096 15
000096 19
000096 20
000096 22
000096 22
000096 22
000096 22
000096 22
000096 22
000096 22
000096 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                      306
                                                                                                                                                                                                                                                                                                                                                                                                366
                                                                                                                                                                                                                                                                                                                                                                                                                         500
                                                                                                                                                                                                                                                                                                                                                                                                                                                  426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             800
                                                                                                        Development of genetically engineered bacteria for production of selected aromatic compounds
Patent: US 6210937-A 25 03-APR-2001;
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                       CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                         CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                              CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                            441 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCCCCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATCCCCGAAGAACTGCCGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Transfrecceansersaaccerescrinecesercenaccerectererereacerra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGCGGGCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGCGGCCCGGAGCTGGCGTTACAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 681 ACATCATCGACATTAAACCCGGGACTTTAATTGAGATAGGCCGTGATGCCGGGTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                     187 ATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCTATTGTAAAGAGAGACCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                          .;
0
                                                    Unclassified.
1 (bases 1 to 6641)
Markins, C.S., Bulmer, D.K., Johnson, B.F. and Amaratunga, M.
                                                                                                                                                                                                                               Length 6641;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCUS U00096 Accession U00096
                                                                                                                                                                                                                                                         0; Indels
                                                                                                                                                                                                                            72.8%; Score 498; DB 2; Le
100.0%; Pred. No. 1.5e-143;
tive 0; Mismatches 0;

    .6641 /organism="unknown" /mol_type="unassigned DNA"

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              End
110000
210000
310000
510000
510000
610000
910000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCGTCACCGTTGTACTAA 684
 GI:15106656
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   fragments
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100001
300001
400001
500001
600001
700001
900001
                                                                                                                                                                                                                              Query Match 72.8
Best Local Similarity 100.
Matches 498; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence split into 47 fb
Fragment Name
U00096_00
U00096_01
U00096_03
300
U00096_04
400
U00096_06
U00096_06
U00096_06
U00096_06
U00096_07
U00096_09
 AR144789.1
                       Unknown.
Unknown.
                                                                                                                                                                                                                                                                                                                                         247
                                                                                                                                                                                                                                                                                                                                                                                             307
                                                                                                                                                                                                                                                                                                                                                                                                                                                 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               741
                                                                                                                                                                                                                                                                                                                                                                  381
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 801
                                       ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 13
U00096 42
WPCOMMENT
                                                                REFERENCE
AUTHORS
                                                                                                                                JOURNAL
VERSION
KEYWORDS
                                                                                                        TITLE
                                                                                                                                                                                                    ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         엄
                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
```

ö 246

```
56515
                                                                                                                                                                                                                                                                                                                                                                                                             56395
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Direct Submission
Submitted (103-SEP-1993) 608-263-7459
Submitted (103-SEP-1993) 608-263-7459
Cot 29, 1993 this sequence version replaced gi:396288.
This sequence was determined as part of the E. coli Genome Project (Frederick R. Blattner, director) at the University of Misconsin-Madison. Supported by award HG00301 from the NIH Human Genome Project. The entire sequence was independently determined from E. coli MG1655, overlaps and conflicts with other sequence determinations are annotated. The start of this entry overlaps the end of the entry ECUW87 (119201) by 93 bp. NOTE: An update was submitted on 25-OCT-1993, reflecting a correction to the hemE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BCT 17-DEC-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gub_etrain="MG1655"
/db_xref="taxon:562"
//note="This sequence comprises the following lambda clones: EC18-126, EC14-54, EC21-52, EC17-24, EC17-203, EC19-105, EC18-208, EC18-210, EC17-200, EC18-31, EC30-41, EC
                                                                                                                                                                                                                                  546
                                                                                                                                                                                                                                                                                                              909
                                                                                                                                                                                                                                                                                                                                                                                         999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales; Enterobacteriaceae; Escherichia.

1 (bases 1 to 176195)
Blattner, F.R., Burland, V., Plunkett, G. III, Sofia, H.J. and
CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCCCCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                 56276 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                             56336 TTATGTGCCGATGGTGAACGGTGGCTTGCCGGTCGTACCGTCCTACCGTCCTACCGTCTAACGTTA
                                                                                                                                                                                                                                                                       56396 AGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                  ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                       TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                              547 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                         CGACGTTCCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Daniels, D.L.
Analysis of the Escherichia coli genome. IV. DNA sequence of
region from 89.2 to 92.8 minutes
Nucleic Acids Res. 21 (23), 5408-5417 (1993)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ECOUW89 176195 bp DNA linear Bd.
E. coli chromosomal region from 89.2 to 92.8 minutes.
U00006
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /mol_type="unassigned DNA"
/strain="K-12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             l. .l/ozzzz
/organism="Escherichia
______T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             56576 GCGTCACCGTTGTACTAA 56593
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (bases 1 to 176195)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    U00006.1 GI:409785
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .176195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Escherichia coli
Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Blattner, F.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sequence.
                                                                         367
                                                                                                                                                       427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       667
                                                                                                                                                                                                                                                                                                                                                                                         607
                                                                                                                                                                                                                                  487
307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCESSION
VERSION '
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PUBMED
REFERENCE
AUTHORS
TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 15
ECOUW89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LOCUS
                                g
                                                                                                          g
                                                                                                                                                                                     ద
                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         음
                                                                     ò
                                                                                                                                                    ઠે
                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Continuation 743 of 47) of AP009048 from base 4200001 (AP009048 Escherichia coli W3110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTGGATCCCCAACTGCTCGACTGCCTGTTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 56215
50949 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG 51008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       56155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                             LOCUS AP009048 Accession AP009048
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 110000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 72.8%; Score 498; DB 15; Best Local Similarity 100.0%; Pred. No. 3e-143; Matches 498; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2010000
2110000
2210000
2310000
                                                                                                                                                                                                                              110000
210000
310000
410000
510000
610000
810000
                                                                                                                                                                                                                                                                                                                                                                                         910000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1310000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1810000
                                                                                                                                                                                                                                                                                                                                                                                                                                1110000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         4210000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       4510000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1510000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2710000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3010000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3610000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3710000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4646332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4410000
                                  fragments
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1600001
1700001
1800001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1900001
2000001
2100001
2200001
                                                                                                                                                                                                                                                  100001
200001
300001
400001
500001
600001
                                                                                                                                                                                                                                                                                                                                                                                                                                1000001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       300001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3500001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4100001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             400001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                500001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  600001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3100001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    200001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1300001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4600001
                                                                                                                                                                                             47
                                                                                                                                                                                             Sequence split into
                                                                                                                                                                                                              247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                187
                                                                                                                                  RESULT 14
AP009048 42
WPCOMMENT
셤
                                  ઠે
                                                                     ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
```

```
/ procein_id="AAC43053.1"
/ bbcotein_id="AAC43053.1"
/ db xref="G1:409787"
/ db xref="G1:409787"
/ translation="McSGSAGGILTPISSLDLNALGNLPAAKGVDAEQSALENGLTLV
/ translation="McSGSAGGILTPISSLDLNALGNLPAAKGVDAEQSALENGLTLV
LKVIERLLDSDGATSALIDKRSLAGDTSLREHLAGVSAGLSCABAIVASANHFCE
EFSRSSSYLQFRALDVRDVCFQLLQGIVGEORFFRAGKITQPAICKADELFPSQFLE
LDKNHLKGILLKSGGTTSHTVILARSFNIPTLUGDITALTPWQQTIYIDGNAGAIV
VERGAVARYYQGBARVQDALREQQRVWITQQARTADGIR IE TAANIAHSVEAQAAFG
NGARGVGLFRTEMLYWDRTSAPGESELVNIFCQALESANGRSIIVRMDIGGDKPVDY
LNIPAAROPIGYRANRIIPFDERIQGIALEVPSVWFIIDGCGEEIDFFSIGSNDLTQVL
LAVDRDNAKVTRHYNSLNRAFLRALDXAVQAVHRQGRWIGLGGELGAKGSVLPLLVGL
GLDELSWARDSPREVLKGWTDNLLLAGRRCRYPRKLEADLWARBAVFSTGLGFSF
LVARECTILESDWRSKEEVLKGWTDNLLLAGRRCRYPRKLEADLWARBAVFSTGLGFSF
LVARECTILESDWRSKEEVLKGWTDNLLLAGRRCRYPRKLEADLWARBAVFSTGLGFSF
ATPHSKSKHIEGGITSVARLQADERQFIIMLLAGPRRARR
                                                                                                                                                                                                                                                                                                                                                                                                           GIGGGKTLDTAKALAHFMGVPVAIAPTIASTDAPCSALSVIYTDEGEFDRYLLIDPNNP
MYIVDTKIYNGGAPARLLAAGIGDALATWFERRACGSRGGATTWAGGKTOYDALALAEL
CYNTLLEBEGBRAMLAAEQHVYTPALERVIENATYLGSVGFEGGGLAAAHAVHGLTAI
PDAHHYYHGEKVAFGTLIQLVLENAPVEBIETVAALSHAVGLPIITLAQLDIKEDVPAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RLQKAIGDEGILFAQTMSRDAQGMVEEAKRLRDAIPGIVVKIPVTSEGLAAIKILKKE
GITTLGTAVYSAAQGLLAALAGAKYVAPYVNRVDAQGGDGIRTVQELQTLLEMHAPES
MVLAASFKTPRQALDCLLAGCESITLPLDVAQQMLNTPAVESAIEKFEHDWNAAFGTT
                                                                                                                                                                                                                                                                                                                                                        /translation="MPHLALLISKGAIMDRIIQSPGKYIQGADVINRLGEYLKPLXER
WLVVGDKFVLGFAQSTVEKSFKDAGLVVEIAPFGGECSQNEIDRLRGIAETAQCGAIL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /translation="MELYLDTANVAEVERLARIFPIAGVTTNPSIIAASKESIWEVLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /trānslation="MRARIICGFRLVSETGSGSSSSDLTSASGASQWGNSSRSHWLKR
WCASCSSAPEISNWQLSPASVSVPISARALLALPCGQCAGYATQFVMKKYYTAFQRGL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         complement (4922. .4949)
//note="promoter matrix score of 47; putative; within ORF f220, which would auggest alternate start codon" complement (4962. .7097)
/note="similar to phosphotransferase system enzyme I"
                                                                                                                                    note="similar to Bacillus stearothermophilus glycerol
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MRIVAEAACAEGETIHNMPGGATPDQVYAALLVADQYGQRFLQEWE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     note="promoter matrix score of 46; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          75 degrees"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4022. .4156
/note="predicted bend of 75 degrees"
                                                                                                                                                                                                                                                                   /product="glycerol dehydrogenase"
/protein_id="AAC43051.1"
/db_xref="G1:396292"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IMHEEFRNALVNAASADAIASLLOHELEL"
     bend of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /label=ORF f220
/protein_id="AAC43052.1"
/db_xref="G1:396293"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /protein_id="AAC43054.1"
/db_xref="GI:409788"
                               .4316)
                                                                                    .4316)
                               complement (3174.
                                                                                    complement (3174.
                                                                                                                                                                                             /codon_start=1
/transl_table=11
/label=ORF f380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement (7108.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7578. .7699
/note="putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
/transl_table=1:
/label=ORF f711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 7099. .7428
/codon start=1
                                                                                                                                                                 dehydrogenase"
                                                                                                              /gene="gldA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /label=ORF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /transI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      terminator
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    promoter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 promoter
                                 gene
                                                                                 CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SGS
                                                                                                                                                                                                                                                                                                                                                                         /translation="AITSGLEVVWTQTPTQWSNYFFENLFKYEWVQTRSPAGAIQFEA
VDAPEIIPDPFDPSKKRKPTMLVTDLTLRFDPEFEKISRRFLNDPQAFNEAFAKWFK
LTHRDWGPKSRYIGPEVPREDLIWODPLPQPIYNPTEQDIIDLKFAIADSGLSVSELV
SVAWASASTRGGDKRGGANGARLALMPQRDMDVNAAVRALPVLEKIQKESGKASLA
DIIVLAGAVOFVBRAASAAGLSIHVPPRPGRVDARQDOTDIEWFELLEPIADGFRNYRA
RLDVSTTESLLIDKAQQLTLTAPEMTALVGGNRVLGANFDGSKNGVFTDRVGVLSNDF
FVNLLDMRYEWKATDESKELFEGRDRETGEVKFTASRADLVFGSNSVLRAVAEVYASS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /label=GRF f205
/protein id="AAC43050.1"
/db_xref=id=1396291"
/db_xref=id=1396291"
/translation="MRASLALLSLTAFTSHSLKSPAVPPTVVQIQANTNLAIADGAR
QCIGSTLFYDPAYVQLTYPGGDVPQERGVCSDVVIRALRSQKVDLQKLVHEDMAKNFA
BYPQKWKLKRPDSNIDHRRVPNLETWFSRHDKTRPTSKNPSDYQAGDIVSWRLDNGLA
HIGVYSDGFARDGTPLVVINIGAGAQBEDVLENWRWYGHYRYFVK"
                                                                                                                                                                                       /standard_name="catalase HPI; catalase-peroxide; catalase"
/note="CG_Site No. 14983"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SYIGAFDFTALRCI FGALVLFIVLLLRGRGMRPTPFKYTLAIALLQTCGMVGLAQMAL
VSGGAGKVAILSYTMPFWVVI FAALFLGERLRRGQYFAILIAAFGLFLVLQPWQLDFS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SMKSAMLAILSGVSWGASAIVAKRLYARHPRVDLLSITSWQMLYAALVMSVVALLVPQ
REIDWQPTVFWALAYSAILATALAWSLWLFVLKNLPASIASLSTLAVPVCGVLFSWWL
LGENPGAVEGSGIVLIVLALALVSRKKKEAVSVKRI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             translation="MGERKLHTGSLMSAAGKSNPLAISGLVVLTLIWSYSWIFMKQVT"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1317. .2255
/note="similar to Desulfurolobus ambivalens hypoth. 28.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /note="promoter matrix score of 42; putative; within ORF
f205, which would suggest alternate start codon"
2912. .3053
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="predicted bend of 81 degrees"
3031. .3064
/standard_name="REP; repetitive extragenic palindromic
                   note="corresponds to M21516; ECOKATGA(1225. .2805)"
1. .1257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        'gene="katG"
'note="93 bp overlap with end of L19201 (ECOWU87)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      'note="corresponds to lambda clone EC18-126"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 156. .15760 - \ \note="corresponds to lambda clone EC14-54"
                                                                                                                                                                                                                                                                                             /product="catalase hydroperoxidase I"
/protein_id="AAC43048.1"
/db_xref="G1:396289"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1429. .1432
/note="TTT in M21516; TTTT here"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="contains 1 REP sequence" 3090. .3219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           kDa protein in sor 3' region"
/codon start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="G in M21516; C here"
1266. .1305
/note="putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="C in M21516; G here"
complement(2282. .2899)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DAHEKFVKDFVAAWVKVMNLDRFDLL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /label=ORF 0312
/protein_id="AAC43049.1"
/db_xref="GI:409786"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement (2886. .2915)
                                                                                                                                                           number="1.11.1.6"
                                                                                                                                                                                                                                             codon_start=1
transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  codon start=1
transI table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .161
/gene="katG"
                                                                            'gene="katG"
                                                                                                                                 /gene="katG"
/EC number="
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="katG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          element"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1. .93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              misc_difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        misc_difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                misc_difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             misc_structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            misc_structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     repeat_region
misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         terminator
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   promoter
                                                     gene
                                                                                                     CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CDS
```

```
Transfecceansersaaccersecrisecestreraccercersersersaacerra 118047
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 118048 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAACGCCGTTAGGACGCTTACGATGTTC 118107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 117927
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        117987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    118227
                              /codon start=1
/transl_table=11
/transl_table=11
/transl_table=11
/bab=10RF 0359
/protein_id="MAG43055.1"
/db_xref="G1:396296"
/translation="MNELVQTLKNTRQHLMTGVSHMIPFVVSGGILLAVSVMLYGKGA VPDAVADPUNKKLFDIGVAGGTLMVGNSFGAG FFGALIAGIIGGIVMYTKKIPVHKVLRSVMPIFIIPIVGTLITAGIMWGISEPVGA LTNSLTQWLQGMQGSIVMLAVIMGLMLAFDMGGPVNKVAYAPMLICVAQGVYTVVAI AAVGICIPPLGMGLATLIGRRKNFSABERETGRAALVMGCWGVTEGAIPFAANDPLRVI
                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                     366
                                                                                                                                                                                                                                                                                                                                                                306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    999
7771. .8850
/note="aimilar to phosphotransferase system enzyme II"
                                                                                                                                                                                                                                                                                                                                                                                                                                   CAGCAGGGAAAAACGGTAAAGCGTGACGATGCAGCGGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      118168 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                            187 ATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTTGCGCTTTGTAAAGAGATCCCTGCC
                                                                                                                                                                                                                                                                                                                                                                CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTTCCTTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGCGGGCCGGAGCTGGCGTTACAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCCGGCCTGTGGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                           Length 176195;
                                                                                                                                                                                                                                                            ;
                                                                                                                                                                                                                        Query Match 72.8%; Score 498; DB 15; Length 1
Best Local Similarity 100.0%; Pred. No. 3.4e-143;
Matches 498; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      completed: May 30, 2006, 02:12:44
le : 4102 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCGTCACCGTTGTACTAA 118245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                247
                                                                                                                                                                                                                                                                                                                                                                                                                                   307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     117868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      117928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           117988
 CDS
                                                                                                                                                                                                                                                                                                                              욥
                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 윱
```

Search co Job time

```
(without alignments)
3974.653 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | FBMC_Celerra_SIDS3/ptodata/2/ina/1_COMB.seq:*
| FBMC_Celerra_SIDS3/ptodata/2/ina/5_COMB.seq:*
| FBMC_Celerra_SIDS3/ptodata/2/ina/6_COMB.seq:*
| FBMC_Celerra_SIDS3/ptodata/2/ina/6_COMB.seq:*
| FBMC_Celerra_SIDS3/ptodata/2/ina/H_COMB.seq:*
| FBMC_Celerra_SIDS3/ptodata/2/ina/H_COMB.seq:*
| FBMC_Celerra_SIDS3/ptodata/2/ina/P_COMB.seq:*
| FBMC_Celerra_SIDS3/ptodata/2/ina/P_COMB.seq:*
| FBMC_Celerra_SIDS3/ptodata/2/ina/PECOMB.seq:*
| FBMC_Celerra_SIDS3/ptodata/2/ina/PECOMB.seq:*
| FBMC_Celerra_SIDS3/ptodata/2/ina/PECOMB.seq:*
                                                                                                                                                                                                                                                                                                                                                      1 atggetteetetgteattte......eggegteaeegttgtaetaa 684
                                                                                                                                                                         May 29, 2006, 10:44:22; Search time 322 Seconds
GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1403666 segs, 935554401 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                  - nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                              IDENTITY_NUC
Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Issued Patents NA:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                            US-10-718-311-7
684
                                                                                                                                                                                                                                                                                                                       Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                 Scoring table:
                                                                                                               OM nucleic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Database :
                                                                                                                                                                                                                                                                                                                                                      Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Searched:
                                                                                                                                                                         Run on:
```

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

sequence 12, Appl Sequence 3, Appli Sequence 12, Appli Sequence 41, Appli Sequence 12, Appli Sequence 12, Appli Sequence 12, Appli Sequence 6, Appli Sequence 6, Appli Sequence 12, Appli Sequence 5, Appli Sequence 12, Appli Sequence 12, Appli Sequence 17, Appli Sequence 17, Appli Sequence 17, Appli Sequence 17, Appli Sequence 17, Appli Sequence 17, Appli Sequence 17, Appli Sequence 18, Appli Sequence 18, Appli Sequence 16, Appl Sequence 7, Appli Sequence 24, Appl Sequence 25, Appl Description US-09-896-866B-16 US-09-085-341-7 US-09-064-693A-24 US-09-064-693A-25 US-09-865-86B-12 US-09-865-341-3 US-09-885-341-3 US-09-489-039A-1234 US-08-152-483B-8 US-08-152-483B-8 US-08-096-043-12 US-08-096-043-12 US-08-096-043-12 US-08-096-043-12 US-08-096-043-12 US-08-096-13937A-6 US-08-096-13937A-6 US-08-096-13-12 US-08-08-13937A-6 US-08-08-13937A-6 US-08-13937A-6 US-08-1469-202-17 US-08-469-202-17 US-08-469-202-17 US-08-469-202-17 US-08-469-202-17 US-08-469-202-17 SUMMARIES Query Match Length Result 2210987911098765 Š.

	Conjugat	prote
Appl Appl Appl Appl Appl Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli	Form Malate Coi	fusion 0;
νησυσυμη	Ма	1 CPL Gaps
	Fo r#	ted,
Sequence Seq		chloroplast-targeted 13; Length 684; 1-230; Indels 0; (
	fere	t-ta h 66 18
	Sinapoyltransferase	oplast- Length Indels
	3 y1t	loro; ; r 30;
1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	napo Po	
7. 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	e Sj B Ges	the ; DE 1.16 hes
US-08-484-434C-22 US-09-384-361-18 US-09-384-361-18 US-09-384-361-22 US-08-095-726-38 US-08-095-726-38 US-08-095-726-38 US-08-095-726-38 US-08-09-673-43 US-09-612-404-9 US-08-404-9 US-08-406-858-5 US-08-406-858-5 US-08-120-703-5 US-08-120-703-5 US-08-399-027-5 PCT-US91-04036-5 PCT-US91-04036-5 PCT-US91-04036-5 PCT-US91-04036-5	6B ::Malate S Glucosides (896, 866B	rame of th ore 684; ed. No. 1. Mismatches
US-08-48 US-09-38 US-09-38 US-09-38 US-08-09-38 US-08-09-18 US-08-09-18 US-08-09-18 US-08-10 US-08-17	56B 3e:M Glu (896	frame Score (Pred. 1
US-08-484-434C-22 US-09-384-361-15 US-09-384-361-12 US-09-384-361-22 US-08-095-726-38 US-08-096-043-31 US-08-096-623-43 US-08-096-623-43 US-08-441-340-9 US-08-441-340-9 US-08-484-274A-9 US-08-126-002-5 US-08-399-612-404-9 US-08-399-622-5 US-08-399-622-5 US-08-399-023-5 US-08-120-703A-5 US-08-120-703A-5 US-08-120-703A-5 US-08-120-703A-5 US-08-120-703A-5 US-08-399-023-5 US-08-399-023-5 US-08-399-023-5 US-08-399-023-5 US-08-399-023-5 US-08-399-023-5 US-08-399-023-5 US-08-399-023-5	9686 ucos cid 709/	ng , 0
a w w w w w w w w w w w w w w w w w w w	6B-16 6, Application US/09896866B 66,42036 66,42036 FGARMATION: : Flint, Dennis : Flint, Dennis : Meyer, Knut : Vitanen, Paul INVENTION: Shapoylglucose:Malate INVENTION: Benzoic Acid Glucoside REPLICATION NUMBER: US/09/896,866B TILING DATE: 2001-06-29 ILING DATE: 2001-06-29 ILING DATE: 2000-07-07 ING D	Sequence te reading 100.0%; 100.0%; trive 0;
28 28 28 28 28 28 28 28 28 28 28 28 28 2	ion US. innis innis innt innis i	ivoli
	B-16 642036 6642036 F42036 F1int, Denni Meyer, Knut Viitanen, P NVENTION: Be, RENCE: BC1034 FENCE: BC1034 FENCES: BC10	
	lica 336 110N: 110N: 110N: 110N: 110N: 110N: 110N: 110N: 110N: 110N: 110N:	fici fea TON: arit
	BB-16 5, Applica 6642036 6642036 F642036 F7 Flint, D I Wyer, Vittone INVENTION INVENTION ILING DATE ICATION NA ILING ICATION NA I	TYPE: DNA ORGANISM: Artificial ORGANISM: Artificial NAME/KEY: misc featus OTHER INFORMATION: OF 9-896-8668-16 ery Match st Local Similarity tches 684; Conserv
	668- 16, N. 666 N. 666 TT: TY: INV INV EREN FILL FILL FILL FILL FILL FILL FILL FIL	NA IM: A: IY: M: INFORM 668-7 Ch
	LT 1 9-896-8668 quence 16, tent No. 6 NEEL INFO PPLICANT: PPLICANT: ITLE OF IN ILE REPEREI URRENT APPLI URRENT FIL RIOR APPLI RIOR APPLI RIOR FILIN WHER FILIN OMBER OF SI OFTWARE: M OFTWARE: M	TYPE: DNA ORGANISM: FEATURE: OTHER INF 9-896-866 ery Match st Local
00000000000000000000000000000000000000	RESULT 1 US-09-896-866B-16 Sequence 16, Application US/09896866B Patent No. 6642036 APPLICANT: Flint, Dennis APPLICANT: Meyer, Knut APPLICANT: Wittanen, Paul TITLE OF INVENTION: Benzoic Acid Glus TITLE OF INVENTION: Benzoic Acid Glus TITLE OF INVENTION: Benzoic Acid Glus TITLE OF INVENTION: Benzoic Acid Glus TORRENT APPLICATION NUMBER: US/09/896 CURRENT FILING DATE: 2001-06-29 PRIOR FILING DATE: 2000-07-07 NUMBER OF SEQ ID NOS: 19 SOFTWARE: Microsoft Office 97 LENGTH: 684	6 5 8 ¢
	Z 5	SD .:

te e

ė.

> 엄 ò 셤 ò 셤 à

121 CAAAACCTTGACATCACTTCCATTGCTAGCAATGGTGGAAGAGTTAGCTGCATGCTAGGTG 180 TGGCATATGTCACACCCGGGTTAACGCAACTGCGGTGCGCTGCGCTATTGTAAAGAGATC 240

360

480

480 540 540 9 600 9

420

a ò ద ઠે 윱 ò g ò g ò g ઠે

셤 ò

```
TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATC 240
                                                                                                                                                                                                                          AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              601 TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT 660
                                                                                241 CCTGCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAACGT
                                                                                                                                                                   TTTGAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG
                                                                                                                                                                                                                                                 541 CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                              TTTGAACAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG
                                                                                                                                                                                                                                                                                                          ATTTTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCA
                                                                                                                                                                                                                                                                                                                                  ATTTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGTCGTACCGTCGTTCCTGTGCCA
                                                                                                                                                                                                                                                                                                                                                                                           ACGITAAGCGGCCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCCGTTAGGACGCTTAT
                                                                                                                                                                                                                                                                                                                                                                                                                CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGGCTGTTGCTAACAGAACTGTTT
RESULT 3
US-09-064-693A-24

Sequence 24, Application US/09064693A

Sequence 24, Application US/09064693A

Factor No. 6210937

GENERAL INFORMATION:
TITLE OF INVENTION: BUGINEERED BACTERIA FOR PRODUCTION
TITLE OF INVENTION: OF A SPECIFIC PLASTICS PRECURSOR
NUMBER OF SEQUENCES: 26

CORRESPONDENCE ADDRESS:
ADDRESSEE: W. Gary Goodson
ADDRESSEE: INEEL--Lockheed Martin Idaho
STREET: P.O. BEX 1625

STREET: P.O. BEX 1625

CITY: Idaho Falls
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COUNTRY: us.

ZIP: 83415-3810

COMPUTER READBLE FORM:
MEDIUM TYPE: Diskette, 3.5 inch, 1.44 Mb storage
COMPUTER: Toshiba Satellite Pro T2150CDS

COMPUTER: Windows95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US/09/064,693A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILING DATE:
ATTORNEY/AGENT INFORMATION:
NAME: W. GARY GOOGSON
REGISTRATION NUMBER: 22,387
REFERENCE/DOCKET NUMBER: LIT-1
TELECOMMUNICATION INFORMATION:
TELEPHONE: (208)526-9469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER: Toshiba Satellite E OPERATING SYSTEM: Windows95 SOFTWARE: Word Perfect 7.0 CURRENT APPLICATION DATA: APPLICATION NUMBER: US/09/06/FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Idaho
                                                                                                                                                                                  301
                                                                                                                                                                                                                          361
                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                          421
                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                         481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        601
                         181
                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        661
                                                                                           ద
                                                                                                                                           ò
                                                                                                                                                                             g
                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                         ò
                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                       420
                                                                                                                                                                                                                                                                                       480
                                                                                                                                                                                                                                                                                                                                                                      540
                                                                                                                                                                                                                                                                                                                                                                                                                                                    900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               180
                                                                                                                                                                                                                                               480
                                                                                                                                                                                                                                                                                                                             540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181 TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATC 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
                         CCTGCCCTGGATCCGCAACTGCTCGACTGGCTTTGCTGGAGGATTCCATGACAAAACGT
                                                                                                         TTTGAACAGGGAAAAACGGTAAGCGTGACGATGATCGCGGAAGGGTTTGTCGAGGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                     CTGTTCRCATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGGGGGGGGGGGTTAAGCGGTTAAACCGCTGTTGCTAACAGAACTGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
  CCTGCCCTGGATCCGCAACTGCTCGACTGGCTGCTGGAGGATTCCATGACAAACGT
                                                                                  TTTGAACAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG
                                                                                                                                                              AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                      AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                                                                                                                   ATTTTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCA
                                                                                                                                                                                                                                                                                                                             ACGITAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                                                      ACGTTAAGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                                                                                            CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 ATGCCTTCTCTCTTTTCTTCAGCAGCTGTTGCCACACGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATGCCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACCAGCAGCAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: VITTAREN, PAUL V.
APPLICANT: WEXER, KNUT
APPLICANT: VAN DYK, DREW
APPLICANT: VAN DYK, DREW
TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID
TITLE OF INVENTION: IN GREEN PLANTS
FILE REPERENCE: BC1015 US NO.
CURRENT APPLICATION NUMBER: US/09/855,341
CURRENT FILING DATE: 2001-05-15
NUMBER OF SEQ ID NOS: 16
SOFTWARE: MICROSOFT OFFICE 97
SEQ ID NO 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; OTHER INFORMATION: Description of Artificial Sequence: synthetic US-09-855-341-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  100.0%; Score 684; DB 3; Length 684; 100.0%; Pred. No. 1.1e-230; ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 7, Application US/09855341
Patent No. 6683231
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: DNA
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches 684; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 2
US-09-855-341-7
                                          241
                                                                              301
                                                                                                                      301
                                                                                                                                                              361
                                                                                                                                                                                                     361
                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                     421
                                                                                                                                                                                                                                                                                                                             481
                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                                                                                                                                                                                                                                                              541
                                                                                                                                                                                                                                                                                                                                                                                                                                                    541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
```

d

ò

g

ઠે

a

ò

```
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/064,693A
FILING DATE:
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE:
FILING DATE:
ATTORNEY AGENT INFORMATION:
NAME: W. GATY GOOGSON
REGISTRATION NUMBER: 22,387
REFERENCE/DOCKET NUMBER: LIT-PI-296
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELEPHONE: (208)526-9469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCGTCACCGTTGTACTAA 818
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                    INFORMATION FOR SEQ ID NO: 25.
SEQUENCE CHARACTERISTICS:
LENGTH: 6641 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
      Word Perfect 7.0
                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                   TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
Matches 498; Conserv
      SOFTWARE:
                                                                                                                                                                                                                                                                                                                                US-09-064-693A-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-09-896-866B-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             801
                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                           246
                                                                                                                                                                                                                      306
                                                                                                                                                                                                                                                                                   366
                                                                                                                                                                                                                                                                                                                                                               500
                                                                                                                                                                                                                                                                                                                                                                                             426
                                                                                                                                                                                                                                                                                                                                                                                                                                                           486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      546
                                                                                                                                                                                                                                                                                                                                                                                                                            560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             681 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG 740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                              501 ATCCCGGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           561 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGTGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                   CTGGATCCGCAACTGCTCGACTGCTGCTGCAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                               CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                            ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                         TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGCGGCCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CGACGTTCCCGCCTGCGATTAAGCGGCTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                      621 AGCGGGCGGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                            Gaps
                                                                                                                                                                            ö
                                                                                                                                             Length 854;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-064-693A-25

Sequence 25, Application US/09064693A

Patent No. 6210937

GENERAL INFORMATION:

APPLICANT: Ward, Thomas E.

ITILE OF INVENTION: BNGINEBRED BACTERIA FOR PRODUCTION TITLE OF INVENTION: BNGINEBRED BACTERIA FOR PRODUCTION TITLE OF INVENTION: OF A SPECIFIC PLASTICS PRECURSOR NUMBER OF SEQUENCES: 26

CORRESPONDENCE ADDRESS: 36

ADDRESSEE: W. Gary Goodson ADDRESSEE: INVELL-Lockheed Martin Idaho

ADDRESSEE: INVELL-Lockheed Martin Idaho

STREET: P.O. Box 1625

CITY: Idaho Falls

STATE: Idaho Falls

CONNTRY: USA
                                                                                                                                                                         Indels
                                                                                                                                                         6.2e-165;
                                                                                                                                       72.8%; Score 498; DB 3;
100.0%; Pred. No. 6.2e-16
ive 0; Mismatches 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ZIP: 83415-3810
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 3.5 inch, 1.44 Mb
COMPUTER: Toshiba Satellite Pro 72150CDS
OPERATING SYSTEM: Windows95
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCGTCACCGTTGTACTAA 818
TELEFAX: (208)526-8339
INFORMATION FOR SEQ ID NO: 2
SEQUENCE CHARACTERISTICS:
LENGTH: 854 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                        Query Match 72.8
Best Local Similarity 100.
Matches 498; Conservative
                                                                                           ; TOPOLOGY: linear
US-09-064-693A-24
                                                                                                                                                                                                                                                                   247
                                                                                                                                                                                                                                                                                                                               307
                                                                                                                                                                                                                                                                                                                                                                                            367
                                                                                                                                                                                                                                                                                                                                                               441
                                                                                                                                                                                                                                                                                                                                                                                                                                                       427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            607
                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                          d
                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
```

```
Sequence 12, Application US/09896866B
Patent No. 6642036
GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: Flint, Dennis
APPLICANT: Mayer, Knut
APPLICANT: Vitanen, Paul
TITLE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugate:
                                               ö
                                                                                            246
                                                                                                                                                                                    306
                                                                                                                                                                                                           381 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 440
                                                                                                                                                                                                                                                                                                                      500
                                                                                                                                                                                                                                                                                                                                                                   426
                                                                                                                                                                                                                                                                                                                                                                                           ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG 560
                                                                                                                                                                                                                                                                                                                                                                                                                                                           486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  800
                                                                                                                      561 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCCTTCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                               CTGGATCCGCAACTGCTCGACTGCTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                         307 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGGAATGAA
                                                                                                                                                                                                                                                                                                                                                                 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       187 AIGICACACCCCGCGTTAACGCAACTGCGTGCGCTGTTGTAAAGAGATCCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                               Gaps
                                               ö
    Length 6641;
                                               Indels
72.8%; Score 498; DB 3; Le
100.0%; Pred. No. 2.2e-164;
iive 0; Mismatches 0;
```

```
487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      481
                                                                                                                                                        qq
                                                                                                                                                                                                                                                                             q
                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                   à
                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                                                                                   246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                               426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CGACGTTCCCCCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG 480
                                                                                                                                                                                                                                                                                                                                                    crecarcecaacrecreacrescrerrecresagarrecarsacaaacerrreaa 120
                                                                                                                                                                                                                                                                                                                                                                                                                  121 CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGGAGGATAGAA 180
                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                                                                                                            CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           361 ACATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                   CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                               ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: VIITAMEN, PAUL V.
APPLICANT: VIITAMEN, FAUT
APPLICANT: WEYER, KNUT
APPLICANT: VAN DEW
TITLE OF INVENTION: HGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID
TITLE OF INVENTION: IN GREEN PLANTS
FILE REFERENCE: BC1015 US NA
CURRENT APPLICATION NUMBER: US/09/855,341
CURRENT FILING DATE: 2001-05-15
NUMBER OF SEQ ID NOS: 16
SOFTWARE: MICROSOFT OFFICE 97
SEQ ID NO 3
LENGTH: 495
TYPE: DNA
                                                                                                                                                                                                                                      ö
                                                                                                                                                                                                            Length 495;
                                                                                                                                                                                                                                      0; Indels
                                                                                                                                                                                                         72.4%; Score 495; DB 3; Le
100.0%; Pred. No. 5.1e-164;
iive 0; Mismatches 0;
; TITLE OF INVENTION: Benzoic Acid Glucosides
; FILE REFERENCE: BC1034 US NA
; CURRENT APPLICATION NUMBER: US/99/896,866B
; CURRENT FILING DATE: 2001-06-29
; PRIOR APPLICATION NUMBER: 60/216,615
PRIOR FILING DATE: 2000-07-07
; NUMBER OF SEQ ID NOS: 19
; SOFTWARE: Microsoft Office 97
; SEQ ID NO 12
; SEQ ID NO 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; Sequence 3, Application US/09855341; Patent No. 6683231; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481 GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GCGTCACCGTTGTAC 681
                                                                                                                                                 ; TYPE: DNA; ORGANISM: Escherichia coli
US-09-896-8668-12
                                                                                                                                                                                                                    Best Local Similarity 100.
Matches 495; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        547
                                                                                                                                                                                                                                                                                                                            247
                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                     307
                                                                                                                                                                                                                                                                                                                                                                                                                                             367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  607
                                                                                                                                                                                                           Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                요
                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
```

```
APPLICANT: Gary Breton et. al
TITLE OF INVENTION: NUCLBIC ACID AND AMINO ACID SEQUENCES RELATING TO KLEBSIELLA
TITLE OF INVENTION: PNEUMONIAE FOR DIAGNOSTICS AND THERAPEUTICS
FILE REPERENCE: 2709.2004001
CURRENT APPLICATION NUMBER: US/09/489,039A
CURRENT FILING DATE: US 60/117,747
PRIOR PPLICATION NUMBER: US 60/117,747
SRIGN APPLICATION NUMBER: US 60/117,747
NUMBER OF SEQ ID NOS: 14342
SEQ ID NO 1234
                                                                                                                                                                                                                                                                                                                                                                                                                                            246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241 francisciccancercancercercercercercercercercercercrearcance 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181 Arcccceaagaacreccecrecrecceaaagaercrecrracregracrecreaaarrrre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        361 ACATCATGGACATTAACCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         247 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61 CTGGATCCGCAACTGCTCGACTGGCTGTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         307 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           367 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        148 Arcricciarcinicia de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición del la proposición del la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la proposición de la 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 Argicacaccicciccinaacccaacrecerecerececrariciaaacacarecerece
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   <u> AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC</u>
                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                   ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              41.2%; Score 282; DB 3; Length 645; llarity 72.9%; Pred. No. 1e-88; Conservative 0; Mismatches 135; Indels
                                                                                              , OTHER INFORMATION: Description of Unknown Organism:E. coli
US-09-855-341-3
                                                                                                                                                                                                                                                                                                                                              0; Indels
                                                                                                                                                                                                                                           Query Match 72.4%; Score 495; DB 3; Le
Best Local Similarity 100.0%; Pred. No. 5.1e-164;
Matches 495; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; Sequence 1234, Application US/09489039A; Patent No. 6610836; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      , ORGANISM: Klebsiella pneumoniae US-09-489-039A-1234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            667 GCGTCACCGTTGTAC 681
ORGANISM: Unknown Organism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 7
US-09-489-039A-1234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Simi
Matches 363;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     607
```

```
121 CAAAACCTTGACATCCATTCCATTGCTAGCAATGGTGGAAGAGTTAGCTGCAGGTG 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 AGCATGGTTGCACCTTTCACTGGTCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
8 ATGCTTCCTCAGTTCTTTCCTCTGCAGCAGTTGCCACCGCAGCAATGTTGCTCAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  68 AACATGGTTGCACCTTTCACTGGCCTTAAGTCAGCTGCCTCATTCCCTGTTTCAAGGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OTHER INFORMATION: N. benthamiana rubisco partial cDNA sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 499;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                27; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 140.8; DB 3;
Pred. No. 6.3e-39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0; Mismatches
                                                                                                                                                                                                                                                              US-09-495-797-41

Sequence 41, Application US/09495797

Patent No. 6369296

GENERAL INFORMATION:
APPLICANT: Martin-Hernandez, Ana MAPPLICANT: Martin-Hernandez, Ana MAPPLICANT: Baulcombe, David C
TITLE OF INVENTION: Viral Vectors
FILE REPERENCE: Mewburn 43, 047

CURRENT APPLICATION NUMBER: US/09/495,797

CURRENT FILING DATE: 2000-02-01

NUMBER OF SEQ ID NOS: 46

SEQ ID NO 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 8, Application US/08152483B
Patent No. 5529909
GENERAL INFORMATION:
APPLICANT: Della-Cioppa, Guy
APPLICANT: Kumagai, Monto
TITLE OF INVENTION: TYROSINNSE-ACTIVATOR
TITLE OF INVENTION: PROTEIN FUSION ENZYME
NUMBER OF SEQUENCES: 9
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0,
SOFTWARE: Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SSEE: Pennie & Edmonds
F: 2730 Sand Hill Road
Menlo Park
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: DNA
TYPE: DNA
ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 20.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Best Local Similarity 85.3
Matches 157; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STATE: California COUNTRY: U.S.A.
                                                                                                                                                184
                                                                              TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                188 rccc 191
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGGC 184
                                                                                                                                                7000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         94025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-495-797-41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 10
US-08-152-483B-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 499
                                                                          181
                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                             g
   셤
                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 366
                                                                                                                                                                                                                                                          327
                                                                                                                                                                                                                                                                                                                             367 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG 426
                                                                                                                                                                                                                                                                                                                                                                                328 CTGACTGACGGGGGGCTGCTGCCCGACGCGCGCTACTGGCTGCGGGGGGAGATTATA 387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 AACATGGTTGCACCTTTCACTGGCCTTAAGTCAGCTGCTCATTCCCTGTTTCAAGGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cercerrececereceeradececadacecerecrecreseasecriririaeer 627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                   CTGGATCCGCAACTGCTCGACTGTTGCTGGAGGATTCCATGACAAACGTTTTGAA
                                                                                  CTGCCGCCGCCGCTAAGTGACTGGCTGCTGGAGGACTCAATGACCCAGCGCTTTGAA
                                                                                                                                                                                                                                                  CAACAAGGAAAGCAGGTCACCGTGACCCTGGTTAACGAAGGGTATATCGGCCGTGACGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  427 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             reredricede de contra caracide de contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra cont
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        547 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Acgregaciarina de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra del la contra del la contra del la contra del la contra del la contra de la contra de la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la contra del la con
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 Argectriccrcarriccrcrcrcrcagical argectaccaccacaarcriccrcaaccr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       487 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 204;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 3, Application US/09839477;
Sequence 13, Application US/09839477;
GENERAL INFORMATION:
APPLICANT: Shortosh, Basil S.
APPLICANT: DeBorte, Lorin R.
TITLE OF INVENTION: COA-CARBOXYLASE
FILE REFERENCE: O7148-094001
CURRENT APPLICATION NUMBER: US/09/839,477
CURRENT FILING DATE: 2001-04-20
PRIOR FILING DATE: 2001-04-20
NUMBER OF SEQ ID NOS: 12
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 3
LENGTH: 204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3.6e-39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 140.8;
Pred. No. 3.6e
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 628 GCGTCGCCGTTGTACTAA 645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               20.6%;
85.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: DNA ORGANISM: Nicotiana tabacum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 85.3
Matches 157; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NAME/KEY: CDS
LOCATION: (1)...(204)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 8
US-09-839-477-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOCATION: (1
US-09-839-477-3
                                                                                                     208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            388
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             607
                               247
                                                                                                                                                                                307
                                                                                                                                                                                                                                                  268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               임
                                                                                                                                                                                à
                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              됝
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
```

ö

```
HITLE OF INVENTION: Genetically Engineered Hosts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MOLECULE TYPE: DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 83.6%;
Matches 148; Conservative 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STATE: IL
COUNTRY: USA
ZIP: 60680-0703
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-08-095-726-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-08-096-043-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     69 AACATGGTTGCACCTTTCACTGGCCTTAAGTCAGCTGCCTCATTCCCTGTTTCAAGAAG 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9 ATGCTTCCTCAGTTCTTTCCTCTGCAGCAGTTGCCACCGCAGCAATGTTGCTCAAGCT 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            129 CAAAACCTTGACATCCCTTCCATTGCCAGCAACGGCGGAAGAGTGCAATGCCATGCCGG 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 ATGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 133.2; DB 2; Length 1442;
Pred. No. 5.9e-36;
0; Mismatches 28; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT: Yarger, James G
APPLICANT: Yen, Huei-Che B
TITLE OF INVENTION: Beta-Carotene Biosynthesis in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BIOG-20240/8129-040
CURRENT APPLICATION DATA:

APPLICATION NUMBER: US/08/152,483B
FILING DATE: No. 5529909ember 12, 1993
CLASSIPLCATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 1952,602
FILING DATE: March 30, 1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 923,692
FILING DATE: July 31, 1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 600,244
FILING DATE: October 22, 1990
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 61,191
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 41,617
FILING DATE: July 26, 1991
ATTORNEY/AGENT INFORMATION:
NAME: Halluin, Albert P.
REGISTRATION NUMBER: 25,227
REFERENCE/DOCKET NUMBER: 25,227
REFERENCE/DOCKET NUMBER: 25,227
REFERENCE/DOCKET NUMBER: 25,227
TELECOMMUNICATION INPORMATION:
TELEFRANE: (415) 854-3660
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 12, Application US/08095726
Patent No. 5530188
GENERAL INFORMATION:
APPLICANT: Auslch, Rodney L
APPLICANT: Brinkhaus, Friedhelm L
APPLICANT: Proffict, John H
APPLICANT: Proffict, John H
APPLICANT: Yarger, James G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 84.3%;
Matches 150; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: nucleic acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE:
DESCRIPTION: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ANTI-SENSE: NO
ORIGINAL SOURCE:
ORGANISM:
IMMEDIATE SOURCE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH: 1442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HYPOTHETICAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-08-152-483B-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 11
US-08-095-726-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
```

```
61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 AACATGGTGGCGCCTTTCACTGGCCTTAAGTCAGCTGCCTCATTCCCTGTTTCAAGGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 Areserricercasirerricerersesses as a reserved de la Areserca de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de la Areserra de 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 177;
NUMBER OF SEQUENCES:

NUMBER OF SEQUENCES:

CORRESPONDENCES:

ADDRESSER: Amoco Corp., Patents and Licensing Dept
STREET: 200 B Randolph St
CITY: Chicago
CITY: Chicago
STATE: 1L
COUNTRY: USA
ZIP: 60660-7703

CONFUTER READABLE FORM:
MEDIUM TYPE: FORDEY Misk
COMPUTER READABLE FORM:
MEDIUM TYPE: PLODEY/MS-DOS
SOFTWARE: Patentin Release #1.24
CURRENT APPLICATION NUMBER: US/08/095,726
FILING DATE: 21-UUL-1993
CLASSIFICATION: AS:
FILING DATE: 30-CT-1991
ATTORNEY/AGENT INFORMATION:
FILING DATE: 30-CT-1991
ATTORNEY/AGENT INFORMATION:
TELEPHONE: 3128567180
TELECOMMUNICATION INFORMATION:
TELEPHONE: 3128567180
TELEPHONE: 3128567180
TELEPHONE: MINERESICE:
SEQUENCE CHARACTERISTICS:
LENGTH: 177 base pairs
TYPE: nucleic acid
STATORNEY/AGENT INFORMATION:
TELEPHONE: 3128567180
TELEPHONE: 3128567180
TELEPHONE: 3128567180
TELEPHONE: 3128567180
TELEPHONE: 3128567180
TELEPHONE: 3128567180
TELEPHONE: 3128567180
TELEPHONE: 3128567180
TTYPE: nucleic acid
STATE: TOTALES: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 12, Application US/08096043

Sequence 12, Application US/08096043

Sequence 12, Application US/08096043

Sequence 12, Application US/08096043

Sequence 12, Application Maint Nodes Interpretation Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nuclear Nu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 130.6; DB 2;
Pred. No. 1.3e-35;
0; Mismatches 29;
```

Gaps . 0

```
61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 AACATGGTGGCGCCTTTCACTGGCCTTAAGTCAGCTGCCTCATTCCCTGTTTCAAGGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACACGCAGAGCAATGTTACACAAGCT 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 Arescrirecreastrerricerersesascastrisecasecasecaarstrisereaaser 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 177;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           29; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION:
APPLICANT: Hauptmann, Randal
APPLICANT: Bachenfeldt, william H
APPLICANT: English, Jam;
APPLICANT: Brinkhaus, Friedhelm L
ITILE OF INVENTION: Enhanced Carotenoid Accumulation
ITILE OF INVENTION: Engineered Plants
NUMBER OF SEQUENCES:
CORRESPONDENCES: 9
CORRESPONDENCE ADDRESS:
ADDRESSEE: Amoco Corporation, Law Dept
                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 19.1%; Score 130.6; DB 2 Best Local Similarity 83.6%; Pred. No. 1.3e-35; Matches 148; Conservative 0; Mismatches 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDRESSEE: Amoco Corporation, Law Dept
STREET: 55 Shuman Boulevard, Suite 600
CITY: Naperville
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/785,569
FILLING DATE: 30-0CT-1991
ATTORNEY AGENT INFORMATION:
NAME: Galloway, No. 545816val B
TELECOMMUNICATION INFORMATION:
TELEPHONE: 3128567180
TELEPHANE: 3128564972
INFORMATION FOR SED ID NO: 8:
SEQUENCE CHARACTERISTICS:
LENGTH: 177 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE: Patentin Release #1.24
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/331,004A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILING DATE:
CLASSIFICATION: 800
ATTORNEY/AGENT INFORMATION:
NAME: Galloway, NO. 5618988val B
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COUNTRY: USA
ZIP: 60563-8437
COMPUTER READABLE PORM:
COMPUTER: Floppy disk
COMPUTER: IEM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; Sequence 6, Application US/08331004A; Patent No. 5618988
                                                                                                                                                                                                                                                                                                           TOPPOLOGY: linear MOLECULE TYPE: DNA (genomic) US-08-093-577-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TELEPHONE: 708117247
TELEFAX: 7081172430
INFORMATION FOR SEQ ID NO: 6
SEQUENCE CHARACTERISTICS:
LENGTH: 177 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 14
US-08-331-004A-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 AGCATGGTTGCACCTTTCACTGGTCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61 Aacarderececerricacresecriraagreascreserererrecererreaagaag 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACCACCAGCAATGTTACACAAGCT 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
19.1%; Score 130.6; DB 2; Length 177;
Best Local Similarity 83.6%; Pred. No. 1.3e-35;
Matches 148; Conservative 0; Mismatches 29; Indels 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 8, Application US/08093577

Sequence 8, Application US/08093577

Patent No. 5545816

APPLICANT: Brinkhaus, Friedhelm L
APPLICANT: Mukharji, Indrani
APPLICANT: Wukharji, Indrani
APPLICANT: Yarger, James G
APPLICANT: Yarger, James G
APPLICANT: Yen, Hoei-Che B
TITLE OF INVENTION: Genetically Engineered Hosts
NUMBER OF SEQUENCES: 43
CORRESPONDENCES: 43
CORRESPONDENCES: ADDRESS:
ADDRESSEE: Amoco Corp., Patents and Licensing Dept
SITRET: 200 E Randolph St
CITY: Chicago
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CITY:
STATE: IL
COUNTRY: USA
ZIP: 60680-0703
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.24
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/093,577
"TING DATE: 19-JUL-1993
                            MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.24
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/096,043
FLILING DATE: 22-UUL-1993
CLASSIFICATION ATA:
APPLICATION NUMBER: US/07/785,568
FLILNG DATE: 30-OCT-1991
ATTORNEY/AGENT INFORMATION:
NAME: GALLOway, No. 5530189val B
TELEPHONE: 3128664972
INFORMATION FOR SEQ.1B 0
TELEPHONE: 3128664972
INFORMATION FOR SEQ.1B 0
TELEPHONE: 3128664972
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MOLECULE TYPE: DNA (genomic) US-08-096-043-12
                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH: 177 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
            COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-08-093-577-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
```

```
ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:
APPLICANT: Ausich, Rodney L.
APPLICANT: Brinkhaus, Friedhelm L.
APPLICANT: Brinkhaus, Friedhelm L.
APPLICANT: Proffitt, John H.
APPLICANT: Yarger, James G.
APPLICANT: Yen, Huei-Che Blosynchesis of Zeaxanthin and
TITLE OF INVENTION: Glycosylated Zeaxanthin in Genetically Engineered Hosts
NUMBER OF SEQUENCES: 104
CORRESPONDENCE ADDRESS:
ADDRESSE: Welsh & Katz, Ltd.
STRET: 120 S. Riverside Plaza, 22nd Floor
CITY: Chicago
STATE: IL
                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 AACATGGTGGCGCTTTCACTGGCCTTAAGTCAGCTGCCTCATTCCCTGTTTCAAGGAAG 120
                                                                                                                                                                                                                                                                                                                                                        1 ATGCTTCCTCAGTTCTTTCCTCTGCAGTTGCCACCGCAGCAATGTTGCTCAAGCT 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACCACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                    ô
                                                                                                                                                              Length 177;
                                                                                                                                                       Query Match 19.1%; Score 130.6; DB 2; Length Best Local Similarity 83.6%; Pred. No. 1.3e-35; Matches 148; Conservative 0; Mismatches 29; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER READABLE FORM:

MEDIUM TYPE: Floppy disk

COMPUTER IN FC compatible
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
COMPUTER: IBM PC compatible
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/096,623A
FILING DATE: 22-ULL-1993
CLASSIFICATION DATA:
APPLICATION NUMBER: US 07/865,061
FILING DATE: 09-DEC-1991
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/662,921
FILING DATE: US 07/662,921
FILING DATE: US 07/662,674
FILING DATE: US 07/662,674
FILING DATE: US 07/625,551
FILING DATE: US 07/625,551
FILING DATE: US 07/625,551
FILING DATE: US 07/625,551
FILING DATE: US 07/625,551
FILING DATE: US 07/625,551
FILING DATE: US 07/625,551
FILING DATE: US 07/625,551
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE: US 07/625,531
FILING DATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 12, Application US/08096623A
Patent No. 5684238
; TOPOLOGY: linear
; MOLECULE TYPE: DNA (genomic)
US-08-331-004A-6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 15
US-08-096-623A-12
                                                                                                                                                                                                                                                                                                                                                                            유
                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
```

```
61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                 61 AACATGGTGGCGCCTTTCACTGGCCTTAAGTCAGCTGCCTCATTCCCTGTTTCAAGGAAG 120
                                                                                                                                                                                                                                                                                                                                                                 1 ATGGCTTCCTCAGTTCTTTCCTCTGCAGCAGTTGCCACCCGCAGCAATGTTGCTCAAGCT 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                Gape
                                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                  Length 177;
                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                  Score 130.6; DB 2
Pred. No. 1.3e-35;
0; Mismatches 29
        SEQUENCE CHARACTERISTICS:
    LENGTH: 177 base pairs
    TYPE: nucleic acid
    STRANDEDNESS: single
    TOPOLOGY: linear
    MOLECULE TYPE: DNA (genomic)
    POSITION: I to 177
    MAP POSITION: 1 to 177
    UNITS: bp
                                                                                                                                                                                                                                                  Query Match
Best Local Similarity 83.6%;
Matches 148; Conservative 0
INFORMATION FOR SEQ ID NO:
```

Search completed: May 29, 2006, 12:19:38 Job time : 324 secs

Sequence 3, Ap Sequen

sequence 3, Appli Sequence 1, Appli Sequence 1, Appli Sequence 1, Appli Sequence 1, Appli Sequence 5, Appli Sequence 5, Appli Sequence 1, Appli Sequence 5, Appli Sequence 5, Appli Sequence 6, Appli Sequence 6, Appli Sequence 6, Appli Sequence 6, Appli Sequence 5, Appli Sequence 5, Appli Sequence 5, Appli Sequence 5, Appli Sequence 5, Appli Sequence 5, Appli Sequence 5, Appli Sequence 5, Appli Sequence 31, Appli Sequence 31, Appli Sequence 31, Appli Sequence 31, Appli Sequence 31, Appli Sequence 31, Appli

US-09-839-477-3 US-10-758-064-3 US-10-758-064-3 US-10-165-420-3 US-10-165-420-3 US-10-165-420-3 US-10-487-901-1713 US-10-487-901-5764 US-10-487-901-5764 US-10-487-901-504 US-10-487-901-504 US-10-487-901-504 US-10-487-901-504 US-10-487-901-504 US-10-487-901-504 US-10-487-901-504

US-09-839-477-5 US-10-758-064-5 US-09-770-791-468 US-09-910-664-31 US-10-333-184-182

ALIGNMENTS

```
61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181 TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCGTATTGTAAAGAGATC 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGACGCTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; FEATURE:
; OTHER INFORMATION: Description of Artificial Sequence:synthetic CPL
US-09-855-341-7
                                                                                                                                                                                                                                                                                                                                               Sequence 7, Application US/0985341

Patent No. US20020002715A1

GENERAL INFORMATION:

APPLICANT: VIITANEN, PAUL V.

APPLICANT: VIITANEN, PAUL V.

APPLICANT: VIITANEN, PAUL V.

APPLICANT: VAN DYK, DREW

TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID

TITLE OF INVENTION: IN GREEN PLANTS

FILE REFERENCE: BC1015 US NA

CURRENT APPLICATION NUMBER: US/09/855,341

CURRENT FILING DATE: 2001-05-15

NUMBER OF SEQ ID NOS: 16

SOFTWARE: MICROSOFT OFFICE 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  100.0%; Score 684; DB 3; I
100.0%; Pred. No. 1.9e-222;
ive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity 100.(
Matches 684; Conservative
SEQ ID NO 7
LENGTH: 684
                                                                                                                                                                                                                                                                                                                                           US-09-855-341-7
                                                                                    128.8
124.6
124.6
124.6
121.4
121.4
ठ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                Sequence 3, Appli
Sequence 26139, A
Sequence 5765, Ap
Sequence 1704, Ap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Appl
Appl
Appl
                                                                           (without alignments)
6654.586 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 41,
Sequence 16,
Sequence 7, A
Sequence 47,
Sequence 54,
Sequence 54,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 3, Al
Sequence 12,
Sequence 37,
Sequence 12,
                                                                                                                            1 atggetteetetgteattte......eggegteaeegttgtaetaa 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 3,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                 May 30, 2006, 01:22:26 ; Search time 1263 Seconds
                                                                                                                                                                                                  37784340
       GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-450-763-26139
US-10-487-901-5765
US-10-487-901-1704
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-09-855-341-7

US-09-866-868-16

US-10-699-050-16

US-10-699-050-16

US-10-718-311-7

US-10-462-162-33

US-10-462-162-47

US-10-462-162-29

US-10-462-162-29

US-09-855-341-3

US-09-895-8688-12
                                                                                                                                                                             18892170 segs, 6143817638 residues
                                                                                                                                                                                               of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-699-050-12
US-10-718-311-3
                                                                                                                                                                                                                                                                                          Published_Applications_NA_Main:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SUMMARIES
                                                                                                                                                                                                                                                 Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                              - nucleic search, using sw model
                                                                                                                                              IDENTITY NUC
Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                   Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query
Match Length DB
                                                                                                       US-10-718-311-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               684
684
684
3452
1971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               498
495
495
495
495
1207
718
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5:
77:
76:
76:
71:
71:
71:
76:
76:
                                                                                                                                               Scoring table:
                                                                                                                 Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4495
4995
4995
4995
1444
1444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  684
684
684
684
684
684
684
99.4
                                                                                                                                                                                                Total number
                                              OM nucleic
                                                                                                                             Seguence:
                                                                                                                                                                             Searched:
                                                                                                                                                                                                                                                                                          Database
                                                                 Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Result
```

ö

Gaps

.. 0

Length 684; 0; Indels

Qy 121 CAAAACCTTGACATCCATTGCTAGCAATGGTGGAAGATTAGCTGCATGCA	361 ATGATATGCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGTGAAATCCCCGAAAGAGTCTCGTTACTGTGAAATCCCCGAAAGAGTCTCGTTACTGTGAAATCCTGAAAATCGCTACCGTACCTGTGTCAAAATTGTTATTGTTATTGTTATTGTTATTGTTATTGTTATTGTTATTGTTATTGTTATTGTTACTGCCGTTACTGTACTGTACTGTACTGTACTGTACTGTACTGTACTGTACTGTACTGTACTACTGTACTGTACTACTGTACTACTACTACTACTACTACTA	CCCTCTARCTAA 684 [; TYPE: DNA; CYGAISM: Bscherichia coli; CYGAISM: Bscherichia coli; PEATURE: PEATURE: CDS; NAME/KEX: CDS; LOCATION: (1)(684) US-10-359-369-41 Query Match Query Match Best Local Similarity 100.0%; Score 684; DB 7; Length 684; Best Local Similarity 00.0%; Pred. No. 1.9e-22; Matches 684; Conservative 0; Mismatches 0; Indels 0; Gaps 0; Qy 1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCACGCAGCAATGTTACACAAGCT 60
	481 AGTTAAGGGGCGGAGGTGGGGTTAAAATTGGGTAAAAGGCGGTTAGGAGGCGTTAGGAGGCGTTAGGGTAAAAGGCGGTTAGGAGGCGTTAGGGTAAAAAGGCGGTTAGGAGGCGTTAGGGAGGCGGTTAGGGGGGCTAGGAGGCGTTAGGGTAAAAGGCGGTTAGGGAGGCGTTAGGGGGGCTTAGGGTAAAAGGCGGTTAGGGAGGCGTTAGGGAGGCGTTAGGGGGGTTAGGGGGGCTTAGGGGGGCTTAGGGAGGCGGTTAGGGGGGCTTAGGGGGGCTTAGGGGGGCTTAGGGGGGCTTAGGGGGGCTGGTGGCGGGCTGTGGCGGGCTGTGGCGGGCTGTGGCGGGCTGGGGGG	RESULT 2 US-09-896-866B-16 Sequence 16, Application US/09896866B Sequence 16, Application US/09896866B Sequence 16, Application US/09896866B Sequence 16, Application US/09896866B Sequence 16, Application US/09089686B SENERAL INFORMATION: SAPLICANT: Flint, Dennis APPLICANT: Meyer, Knut APPLICANT: Meyer, Knut APPLICANT: Minapolly Usose: Malate Sinapoyltransferase Form Malate Conjugates TITLE OF INVENTION: Benzoic Acid Glucosides TILE OF INVENTION NUMBER: US/09/896,866B CURRENT APPLICATION NUMBER: US/0216,615 PRIOR FILING DATE: 2000-07-07 NUMBER OF SEC ID NOS: 19 SOFTWARE: Microsoft Office 97 SEC ID NO 16 LENGTH: 64 TYPE: DNA ORGANISM: Artificial Sequence FEATURE: NAME/KRY: misc_feature OTHER INFORMATION: open reading frame of the chloroplast-targeted CPL fusion protein US-09-896-866B-16	Query Match Best Local Similarity 100.0%; Score 684; DB 3; Length 684; Best Local Similarity 100.0%; Pred. No. 1.96-222; Matches 684; Conservative 0; Mismatches 0; Indels 0; Gaps 0; Oy 1 ATGGCTTCCTCTGTCATTCTTCAGCAGCTGTTGCCACAGCAGCAATGTTACACAAGCT 60 Db 61 AGCATGGTTGCATTTCTTCAGCAGCTTGCCACAGCAATGTTACAAAGAAG 120 Oy 61 AGCATGGTTGACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCTGTTACAAAGAAG 120 Db 61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCTGTTACAAAGAAG 120

```
; OTHER INFORMATION: open reading frame of the chloroplast-targeted CPL fusion protei
US-10-699-050-16
                                                                                                                                                                                               61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                          180
                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                    301 TITGAACAGCAAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTITGTCGAGCAA 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AATGAAATCCCGGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CTGTTCACATCCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG 600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    99
                                                                                                                                                                                                                                                                                                                                                                   CCTGCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGT 300
                                                                                                                                                                                                                                                                                                                                                                                                                                  TTTGAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            361 AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         421 ATTITIGITATGIGCCGAIGGIGAACCGIGGCITGCCGGICGIACCGICGTICCIGICICA 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ACGTTAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTAT 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACGTTAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAAGGCCGTTAGGACGCTAT 540
                                                                                                                                             9
                                                                                                                               1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACCAGCAGCAAGTTACACAAGCT
                                                                                                                                                                            61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
                                                                                                                                                                                                                                        TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATC
                                                                                                                                                                                                                                                                                                                          CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      601 TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT
                                                                                                                                                                                                                                                                                                                                                                                               241 ccrecccregarccecaacrecreereererrecreeaegarrccargacaaaacer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ATTITGITATGIGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCCTGTGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT
                                                                                                               1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 7, Application US/10718311
; Sequence 7, Application US/10718311
; GABREAL INFORMATION:
    APPLICANT: WITTANEN, PAUL V.
    APPLICANT: WEYER, KNUT
    APPLICANT: WEYER, KNUT
    TITLE OF INVENTION: IN GREEN PLANTS
    TITLE OF INVENTION: IN GREEN PLANTS
    FILE REFERENCE: BC1015 US NA
    CURRENT APPLICATION NUMBER: US/10/718,311
    CURRENT FILING DATE: 2003-11-20
    PRIOR APPLICATION NUMBER: US/09/855,341
    PRIOR FILING DATE: 2001-05-15
    NUMBER OF SEQ ID NOS: 16
    SOFTWARE: MICROSOFT OFFICE 97
                                                                                  ö
                                                    684;
                                                                                0; Indels
                                                    Length
                                                 100.0%; Score 684; DB 8; I 100.0%; Pred. No. 1.9e-222;
                                                                                0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               661 TTACCGGCGTCACCGTTGTACTAA 684
                                               Query Match 100.
Best Local Similarity 100.
Matches 684; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 5
US-10-718-311-7
                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     541
                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             661
                                                                                                                                        g
                                                                                                                                                                            ઠે
                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                 ď
                                                                                                                                                                                                                                                                                                                              q
                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 16, Application US/10699050

Publication No. US20040142437A1

GENERAL INFORMATION:

APPLICANT: Flint, Dennis

APPLICANT: Plint, Dennis

APPLICANT: Plint, Dennis

APPLICANT: Plint, Dennis

APPLICANT: Plint, Dennis

TITLE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugates

TITLE OF INVENTION: Benizoic Acid Glucosides

TITLE OF INVENTION: Benizoic Acid Glucosides

FILE REFERENCE: BC1034 US NA

CURRENT APPLICATION NUMBER: US/09/896,866B

PRIOR PLING DATE: 2000-07-30

PRIOR FILING DATE: 2000-07-07

NUMBER OF SEQ ID NOS: 19

SOFWARE: Microsoft Office 97

LENGTH: 684
                                                  120
                                                                              120
                                                                                                               180
                                                                                                                                             180
                                                                                                                                                                            240
                                                                                                                                                                                                           240
                                                                                                                                                                                                                                        300
                                                                                                                                                                                                                                                                      300
                                                                                                                                                                                                                                                                                                     360
                                                                                                                                                                                                                                                                                                                                   360
                                                                                                                                                                                                                                                                                                                                                                  420
                                                                                                                                                                                                                                                                                                                                                                                                 420
                                                                                                                                                                                                                                                                                                                                                                                                                                480
                                                                                                                                                                                                                                                                                                                                                                                                                                                              480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       999
TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCCGTTTTGTAAAGAGATC
                                                                                                                                                                                                                                     CCTGCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGT
                                                                                                                                                                                                                                                         CCTGCCCTGGATCCGCAACTGCTCGACTGTTGCTGGAGGATTCCATGACAAAACGT
                                                                                                                                                                                                                                                                                                   TTTGAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGGCGAAGGGTTTGTCGAGCAG
                                                                                                                                                                                                                                                                                                                              301 TTTGAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAG
                                                                                                                                                                                                                                                                                                                                                                                  CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATTITGTIATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          481 ACGTTAAGCGGCCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTGTTCACATCATCACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TGGGGGCGACGTTCCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           481 ACGTTAAGCGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURE:
NAME/KEY: misc_feature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 4
US-10-699-050-16
                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         541
                                               61
                                                                             61
                                                                                                            121
                                                                                                                                           121
                                                                                                                                                                          181
                                                                                                                                                                                                        181
                                                                                                                                                                                                                                                                                                                                                                361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        601
                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                   301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   199
                                                                                                                                                                                                                                                                                                                                                                                                                             421
                                                                           ద
                                                                                                                                    g
                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                               셤
                                             ò
                                                                                                       8
                                                                                                                                                                       ò
                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                  8 8
                                                                                                                                                                                                                                                                                                                                                             ç
                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  d
                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
```

```
; ORGANISM: Esc
US-10-462-162-33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-462-162-47
                                                                                                                                              -
                                                                                                                                                                 H
                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                       61
                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                              301
                                                                                                                                                                                                                                                                                                                                                                                                         361
                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 7
                                                                                                                                                              g
                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                             ઠે
                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Arbutin in Green Plants and Microbes
                                                                                                             ö
                                                                                                                                                                             120
                                                                                                                                                                                                                                                                240
                                                                                                                                                                                                                                                                                     240
                                                                                                                                                                                                                                                                                                           300
                                                                                                                                                                                                                                                                                                                                                    360
                                                                                                                                                                                                                                                                                                                                                                                                                    420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        099
                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                          360
                                                                                                                                                                                                                                                                                                                                                                                               420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       540
                                                                                                                                                                                         AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAGAAG 120
                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                300
                                                                                                                                                                                                                                                                                                                                                                                                                                         480
                                                                                                                                                                                                                                                                                                                                                                                                                                                             480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                   9
                                                                                                                                                       9
                                                                                                                                                                                                                                                                             TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCTGCTATTGTAAAGAGATC
                                                                                                                                             1 AIGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCACACGCATTGTTACACAAGCT
                                                                                                                                                                                                                                   TTTGAACAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGG
                                                                                                                                                                                                                                                                                                                                                                                                            ATTTGTTATGTGCCGATGGTGAACCGTGGCTTCCCGGTCGTACCGTCGTTCCTGTGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACGTTAAGCGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAACGCCGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                            AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCCTGTTACAAAGAAG
                                                                                                                                                                                                                     TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATC
                                                                                                                                                                                                                                                                                                           CCTGCCCTGGATCCGCAACTGCTCGACTGGCTGCTTGCTGGAGGATTCCATGACAAAACGT
                                                                                                                                                                                                                                                                                                                        CCTGCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGT
                                                                                                                                                                                                                                                                                                                                                    TITGAACAGCAGGAAAAACGGIAAAGCGIGACGATGATCCGCGAAGGGITITGTCGAGCAG
                                                                                                                                                                                                                                                                                                                                                                                              AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACGTTAAGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAACGCCGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTGTTCACATCATCATCATAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT
                                                                                                            Gaps
; SEQ ID NO 7
; LENGTH: 684
; TYPE: DNA
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Description of Artificial Sequence:synthetic US-10-718-311-7
                                                                                                             ö
                                                                                        Length 684;
                                                                                      Query Match 100.0%; Score 684; DB 8; Length 6
Best Local Similarity 100.0%; Pred. No. 1.9e-222;
Matches 684; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 33, Application US/10462162
Publication No. US20040261147A1
GENERAL INFORMATION:
APPLICANT: E.I. duPont de Nemours and Company, Inc., APPLICANT: Weyer, Knut
APPLICANT: Viitanen, Paul
APPLICANT: Flint, Dennis
TILE OF INFORTION: High Level Production of Arbutin; FILE REPERENCE: CL 2155 US NA
CURRENT APPLICATION NUMBER: US/10/462,162
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TTACCGGCGTCACCGTTGTACTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TTACCGGCGTCACCGTTGTACTAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 6
US-10-462-162-33
                                                                                                                                                                             61
                                                                                                                                                                                                61
                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                     181
                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                                                    301
                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                                                                                                                                            421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  541
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   481
                                                                                                                                                      요
                                                                                                                                                                                           셤
                                                                                                                                                                                                                                     요
                                                                                                                                                                                                                                                                                유
                                                                                                                                                                                                                                                                                                                        Q
                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                    엄
                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                       ਨੇ
                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                  ò
                                                                                                                                                                            ò
                                                                                                                                                                                                                    ŝ
                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
```

```
Green Plants and Microbes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                180
                                                                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                     AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                        TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTGTTGTAAAGAGAGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CCTGCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITGAACAGCAGGGAAAAACGGIAAGCGIGACGAIGAICCGCGAAGGGIITGICGAGCAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AATGAAATCCCCGAAGAACTGCCGCTGCTGCTGCAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATTTGTTATGTGCCGATGGTGAACCGTGGCTTGCCCGTCGTACCGTCCTGTGTCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CCTGCCCTGGATCCGCAACTGCTCGACTGGTTGCTGGAGGATTCCATGACAAAACGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       rrrdaacadcadgaaaaacdgraadcgrdacdarcarcacddaacdgrrrdrcaadad
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATTITIGITATIGICCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTTCCTTGTGTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACGTTAAGCGGCCGGAGCTGGCGTTACAAAATTTGGGTAAAACGCCGTTAGGACGCTAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CTGTTCACATCATCACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAA
                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                             ;
0
                                                                                                                                                                      Length 684;
                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 47, Application US/10462162
Publication No. US20040261147A1
GENERAL INFORMATION:
APPLICANT: B.I duPont de Nemours and Company, Inc.
APPLICANT: Without, Nout
APPLICANT: Vitanen, Paul
APPLICANT: Flint, Dennis
TITLE OF INTENTION: High Level Production of Arbutin in FILE REFERENCE: CL 2155 US NA
                                                                                                                                                                        ; Score 684; DB 9; I
; Pred. No. 1.9e-222;
0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTACCGGCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTACCGGCGTCACCGTTGTACTAA
   2003-06-16
                                                                                                                                                                        100.0%;
CURRENT FILING DATE: 2003-06-
NUMBER OF SEQ ID NOS: 54
SOFTWARE: Microsoft Office 97
SEQ ID NO 33
LENGTH: 684
                                                                                               TYPE: DNA ORGANISM: Escherichia coli
                                                                                                                                                                    Query Match
Best Local Similarity 100.
Matches 684; Conservative
```

ö

9

120

180

483

543

603

```
FEATURE: OTHER INFORMATION: Nucleic acid sequence of a nucleic acid fragment inserted into OTHER INFORMATION: expression vector pET29a encoding CPL (from Escherichia coli) an OTHER INFORMATION: pHBA 1-hydroxylase (from Cadida parapsilosis).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Arbutin in Green Plants and Microbes
                                                                                                                                                                                                                                                                                                                     244 GCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTT 303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  241 TIGITATGIGCCGAIGGIGAACCGIGGCTIGCCGGACCGICGTACCTGICAACG 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  361 TTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGG 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GAACAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAAT 363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATT 423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301 TTAAGCGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTG 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTA 663
                                                                                                                                                                                                                                                                                                                                                                                                                                    61 GCCCTGGATCCGCAACTGCTCGACTGTTGCTGGAGGATTCCATGACAAAACGTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGG
                                                                                                                                                                                                                                     184 CATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATCCCT
                                                                                                                                                                                                                                                             1 CATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTTTAAAGAGATCCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181 GAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTGTTATGTGCCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TTAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTG
                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ö
                                                                                                                                                   73.0%; Score 499.4; DB 9; Length 1971; 99.8%; Pred. No. 4.6e-159; ive 0; Mismatches 1; Indels 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 72.8%; Score 498; DB 9; Length 498; Best Local Similarity 100.0%; Pred. No. 6.9e-159; Matches 498; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 29, Application US/10462162
PUBLICATION NO. US20040261147A1
GENERAL INFORMATION
JAPPLICANT: E.I. dubont de Nemours and Company, Inc.
APPLICANT: Witanen, Paul
APPLICANT: Vitanen, Paul
APPLICANT: Vitanen, Paul
APPLICANT: Hint, Dennis
JITLE OF INVENTION: High Level Production of Arbut
FILE REFERENCE: CL 2155 US NA
CURRENT PILING DATE: 2003-06-16
NUMBER OF SEQ ID NOS: 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CCGCCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CCGGCGTCACCGTTGTACTAA 501
        ORGANISM: artificial sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               : Microsoft Office 97
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 498
TYPE: DNA
CRGANISM: Escherichia coli
US-10-462-162-29
                                                                                                                                                                           Best Local Similarity 99.8
Matches 500; Conservative
                                                                                                                                                                        Similarity
                                                                                          ; US-10-462-162-54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 9
US-10-462-162-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SOFTWARE: M
SEQ ID NO 29
                                                                                                                                                                                                                                                                                                                                                                                                        304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                   Query Match
                                                                                                                                                                                                                                                                          요
                                                                                                                                                                                                                                                                                                                                                          엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                       ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ሯ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 54, Application US/10462162

Squence 54, Application US/10462162

Publication No. US20040261147A1

GENERAL INFORMATION:

APPLICANT: B.1 duPont de Nemours and Company, Inc.

APPLICANT: Viitanen, Paul

APPLICANT: Viitanen, Paul

APPLICANT: Viitanen, Paul

APPLICANT: Pillt, Dennis

TITLE OF INVENTION: High Level Production of Arbutin in Green Plants and Microbes

FILE REFERENCE: CL 2155 US NA

CURRENT FILING DATE: 2003-06-16

NUMBER OF SEQ ID NOS: 54

SOFTWARE: Microsoft Office 97

LENGTH: 1971

TYPE: DNA
                                                                                                                                                                                          encoding CPL (from
                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                   OTHER INFORMATION: Nucleotide sequence of nucleic acid fragment encoding Ci OTHER INFORMATION: Escherichia coli), pHBA 1-hydroxylase (from Candida CTHER INFORMATION: parapsilosis), and UGT72B1 (from Arabidopsis thaliana).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    303
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       423
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               301 TTAAGCGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAAGGCCGTTAGGACGCCGTTATGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       603
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GGGCGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAACAGAACTGTTTTTA 480
                                                                                                                                                                                                                                                                                                                                                                                                                           09
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  244 GCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAACGTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 GCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAACAGCAGGAAAAACGGTAAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181 GAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGGTGAAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGG
                                                                                                                                                                                                                                                                                                                                                                              184 CATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATCCCT
                                                                                                                                                                                                                                                                                                                                                                                                            1 CATATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATCCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121 GAACAGCAGGGAAAAACGGTAAGCGTGACGATGATCGCGCGAAGGGTTTGTCGAGCAGAAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGGTGAAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TTAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GGGCGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTTCCTGTGTCTAACG
                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                  Length 3452;
                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                           Query Match 73.2%; Score 501; DB 9; Le Best Local Similarity 100.0%; Pred. No. 1.8e-159; Matches 501; Conservative 0; Mismatches 0;
CURRENT APPLICATION NUMBER: US/10/462,162
CURRENT FILING DATE: 2003-06-16
NUMBER OF SEQ ID NOS: 54
SOFTWARE: Microsoft Office 97
SEQ ID NO 47
LENGTH: 3452
TYPE: DNA
ORGANISM: artificial sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CCGCCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CCGGCGTCACCGTTGTACTAA 501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-462-162-54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        664
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 481
                                                                                                                                                                      FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     名
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
```

ö

486

546

909 420 999 480

```
Sequence 12, Application US/09896866B

Patent No. US20020151002A1

GENERAL INFORMATION:
APPLICANT: Flint, Dennis
APPLICANT: Viitanen, Paul
TITLE OF INVENTION: Banzoot/Blucose:Malate Sinapoyltransferase Form Malate Conjugates
TITLE OF INVENTION: Benzoic Acid Glucosides
FILE REFERENCE: BC1034 US NA
CURRENT APPLICATION NUMBER: US/09/896,866B
CURRENT APPLICATION NUMBER: 2001-06-29
FRIOR APPLICATION NUMBER: 60/216,615
FRIOR APPLICATION NUMBER: 60/216,615
FRIOR APPLICATION NUMBER: 60/216,615
FRIOR APPLICATION NUMBER: 000-07-07
                                                                                                                                   241 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCTTCCTGTGTACACGTTA 300
                 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 180
                                                                                                                                                                                                     181 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                  AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                  ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                       ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                   CGACGITCCCGCCTGCGATTAAGGGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                    61 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        367 ATCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          247 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181 ATCCCCGAAGAACTGCCGCTGCCGGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 Argreacecececestraacecaacrecerececreceratreraadadarecerece
Length 495;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 495; DB 3; Le
Pred. No. 7.3e-158;
); Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match 72.4%; Scc
Best Local Similarity 100.0%; Pr
Matches 495; Conservative 0;
                                                                                                                                                                                                                                                                                                                                                                                                      GCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NUMBER OF SEQ ID NOS: 19
SOFTWARE: Microsoft Office 97
SEQ ID NO 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; TYPE: DNA; ORGANISM: Escherichia coli
US-09-896-866B-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 11
US-09-896-866B-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LENGTH: 495
                                                                                                                                                                                  487
                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                  547
                                                                                                                                                                                                                                                                                                                   607
                                                                                                                                                                                                                                                                                                                                                                                   667
                                                                                                                  427
                                                                                                                                                                                                                                                                                   361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        307
                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          427
                                                                       요
                                                                                                               ò
                                                                                                                                            g
                                                                                                                                                                           ò
                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                              g
                                       ò
                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                                                    486
                                                                                                                                                                                                                                                                                                   300
                                                                                                                                                                                                                                                                                                                                                                                                                                   420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     480
                                                                                                                                                                                                  426
                                                                                                                                                                                                                                                                                                                                    546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         246
                                                                                                                                                                                                                                                                                                                                                                                                  909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTGGATCCGCAACTGCTTGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        307 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                9
                                                                                   CTGGATCCGCAACTGCTCGACTGGTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                   CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGCAGCAGAAGAAAA
                                                                                                                                                                                                                     ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                     AGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                     ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTTACCG
ATGTCACACCCCCCCCTTAACGCAACTCCGTGCCCTGCCTATTGTAAAGAGATCCCTGCC
                 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                  AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                  ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 ATGTCACACCCGGGTTAACGCAACTGCGTGCGCTGCTGTTTGTAAAGAGATCCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 3, Application US/0985341

Patent No. US2002002715A1

FRENERAL INFORMATION:
APPLICANT: WITTANEN, PAUL V.
APPLICANT: WAN DYK, DREW
TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID
TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID
TITLE OF INVENTION: HIGH REEN PLANTS
FILE REPERENCE: BC1015 US NA
CURRENT APPLICATION NUMBER: US/09/855,341
CURRENT FILING DATE: 2001-05-15
NUMBER OF SEQ ID NOS: 16
SOFTWARE: MICROSOFT OFFICE 97
SEQ ID NO 3
LENGTH: 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 495;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OTHER INFORMATION: Description of Unknown Organism: E. coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       72.4%; Score 495; DB 3; Le
larity 100.0%; Pred. No. 7.3e-158;
Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCGTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: DNA
ORGANISM: Unknown Organism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       al Similarity
495; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; OTHER INFORU
US-09-855-341-3
                                                                                                                                                                                                                                                                                                                               487
                               -
                                                              247
                                                                                               61
                                                                                                                                307
                                                                                                                                                               121
                                                                                                                                                                                                367
                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                  427
                                                                                                                                                                                                                                                                                               241
                                                                                                                                                                                                                                                                                                                                                                 301
                                                                                                                                                                                                                                                                                                                                                                                                  547
                                                                                                                                                                                                                                                                                                                                                                                                                                  361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local
Matches 49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURE:
                                                                                      셤
                                                                                                                                                      셤
                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                        8 6 8
                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ద
                          g
                                                            ò
                                                                                                                            δ
                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    名 & 人
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
```

486

306 120 366 180 426

9

Gaps ; 0

```
APPLICANT: Plint, Dennis

PUBLICANT: Flint, Dennis

PUBLICANT: Flint, Dennis

APPLICANT: Plint, Dennis

APPLICANT: Meyer, Knut

APPLICANT: Witanen, Paul

ITLE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugate

ITLE OF INVENTION: Benzoic Acid Glucosides

TITLE OF INVENTION: Benzoic Acid Glucosides

ITLE OF INVENTION: Benzoic Acid Glucosides

CURRENT APPLICATION NUMBER: US/09/09,050

CURRENT APPLICATION NUMBER: US/09/896,866B

PRIOR FILING DATE: 2001-06-29

PRIOR FILING DATE: 2000-07-07

NUMBER OF SEQ ID NOS: 19

SEQ ID NO 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                        CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG 666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          121 CAGCAGGAAAAAAGGTAAAGCGTGACGATGATCGCCGAAGGGTTTGTCCGAGAAGAA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTCAACGTTA 486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 247 CTGGATCCGCAACTGCTCGACTGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      307 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATCCCCGAAGAACTGCCGCTGCCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ceacerrececerecearraaeceeraaaceererrecraacaeaererrirraece
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            361 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 495;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     72.4%; Score 495; DB 8; Le
100.0%; Pred. No. 7.3e-158;
vative 0; Mismatches 0;
                                                                                                                                                                 GCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; TYPE: DNA; Escherichia coli
US-10-699-050-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 72.4
Best Local Similarity 100.
Matches 495; Conservative
                                   361
                                                                        607
                                                                                                         421
                                                                                                                                             667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   607
                           ద
                                                                      ò
                                                                                                    요
                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8 8
                                                                                                         909
                                                                                                                                         420
                                                                                                                                                                                999
                                                                                                                                                                                                                480
241 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CTGGATCCGCAACTGCTCCACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   427 TTATGTGCCGATGGTGAACCGTGGCTTTCCCGGTCGTACCGTCCTGTTCCTGTCACGTTA 486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                241 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCCTTGTGTGTCAACGTTA 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               307 CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG 426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC 546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                 301 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                            361 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGGG
                                                                                                                                                                                                 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        547 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                            CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        247 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 301 AGCGGGCCGGAGCTGCGTTACAAAATTGGGTAAAAAGGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 72.4%; Score 495; DB 7; Length 495; Best Local Similarity 100.0%; Pred. No. 7.3e-158; Matches 495; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                        RESULT 12
US-10-359-369-37
i Sequence 37, Application US/10359369
i Publication No. US2030215927A1
i GENERAL INFORMATION:
i APPLICANT: B.1. duPont de Nemoure and Company, Inc.
i APPLICANT: Vitanen, Paul
i APPLICANT: Witanen, Paul
i APPLICANT: Wolver, Knut
i APPLICANT: Wolver, Knut
i APPLICANT: Wolver, Knut
i APPLICANT: Wolver, Knut
i APPLICANT: Wolver, Knut
i APPLICANT: Wolver, Knut
i APPLICANT: Wolver, Sore
i FILE REFERENCE: CL1821 US NA
i CURRENT APPLICATION NUMBER: US/10/359,369
CURRENT FILING DATE: 2003-02-06
i PRIOR FILING DATE: 2003-02-07
i NUMBER OF SEQ ID NOS: 46
i SOFTWARE: Microsoft Office 97
i SEQ ID NO 37
i LENGTH: 495
                                                                                                                                                                                                                                                                    667 GCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA ORGANISM: Escherichia coli FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; NAME/KEY: CDS
; LOCATION: (1)..(495)
US-10-359-369-37
                                                                                                                                                                            607
                                   487
                                                                                                                                                                                                              421
                                                                                                                                                                                                                                                                                   481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 487
                                                                  셤
                                                                                                                                  g
                                                                                                      ઠે
                                                                                                                                                                            ò
                                                                                                                                                                                                            셤
                                 ò
                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
```

```
ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ଚ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           247 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCTTCTTGTTTCTTATGTGCAACGTTA 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCCGTTAGGACGCTATCTGTTC 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181 ATCCCCGAAGAACTGCCGCTGCTGCCGAAGAGTTTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAGCAGAGAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 credarccecaacrecrescrescrescrescresassarrecareaaaacerrreaa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATCCCCGAAGAACTGCCGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCCGGCCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACATCATCGACATTAACCCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                               Sequence 3, Application US/10718311

Sequence 3, Application US/10718311

Sequence 3, Application US/10718311

Sequence 3, Application US/20040143867A1

SEQUENCE OF UNITAMEN, PAUL V.

APPLICANT: WIFFER, WAN DYK, DREW

TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID

TITLE OF INVENTION: IN GREEN PLANTS

TITLE OF INVENTION: UN GREEN PLANTS

FILE REFERENCE: BC1015 US NA

CURRENT APPLICATION NUMBER: US/10/718,311

CURRENT PILING DATE: 2003-11-20

PRIOR FILING DATE: 2001-05-15

NUMBER OF SEQ ID NOS: 16

SOFTWARE: MICROSOFT OFFICE 97

LENGTH: 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 495;
                                                                                                                                                                                                                                                                                                                                                                                                OTHER INFORMATION: Description of Unknown Organism: E. coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match 72.4%; Score 495; DB 8; Le
Best Local Similarity 100.0%; Pred. No. 7.3e-158;
Matches 495; Conservative 0; Mismatches 0;
GCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
ORGANISM: Unknown Organism
                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     307
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    481
 ઠે
                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
```

RESULT 15

```
LOCATION: (893)..(925)
CTHER INFORMATION: 81% homologous to Escherichia coli 4-hydroxybenzoate
CTHER INFORMATION: synthetase, accession number X57434, Smith-Waterman Score=49.
US-10-450-763-26139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    952 TAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGT 1011
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               772 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGAAGAA 831
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      427 T-TATGTGCCGATGGTGAACCGTGGCTTGCC-GGTCGTACCGTCGTTCCTGTGTCAACGT 484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            367 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          485 TAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 545 TCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match 69.1%; Score 472.8; DB 10; Length 1207; Best Local Similarity 99.2%; Pred. No. 4.5e-150; Matches 496; Conservative 0; Mismatches 2; Indels 2;
                                                             APPLICANT: Hyseq, Inc
TITLE OF INVENTION: NOVEL NUCLEIC ACIDS AND POLYPEPTIDES
FILE REFERENCE: 790C1P3/US
CURRENT APPLICATION NUMBER: US/10/450,763
CURRENT FILING DATE: 2003-06-11
PRIOR APPLICATION NUMBER: PCT/US01/08631
PRIOR PILING DATE: 2001-03-30
PRIOR PILING DATE: 2000-03-31
PRIOR FILING DATE: 2000-08-23
NUMBER OF SEQ ID NOS: 60736
SOFTWARE: CUSTOM
Sequence 26139, Application US/10450763
Publication No. US20050196754A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Search completed: May 30, 2006, 01:43:38
Job time : 1265 secs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CGCCTCACCGTTGTACTAA 684
                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: DNA ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                       LENGTH: 1207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      307
```

Published_Applications Mucleic Acid and Published_Applications Amino Acid database searches now reduce the amount of time required for their daily updates. This results in more machine time being available for processing searches.

Mewly publications make up the Published_Applications_Mem databases, applications make up the Published_Applications_New databases; older published

Searches run against Nucleic Acid Published Applications produce two sets of results, with the extensions rupbm (Published Applications NA Main) and .rnpbm (Published Applications Acid Published Applications produce two sets of results, with the extensions rapbm (Published Applications AA Main) and .rapbm (Published AA Main) and .rapbm (Pub

Page

```
US-10-953-349-10521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 뭐
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 8894, Ap
Sequence 9569, Ap
Sequence 6134, Ap
Sequence 312, App
Sequence 77187, A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1043, Ap
80201, A
1056, Ap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 1271, Ap
Sequence 438, App
Sequence 77669, A
Sequence 78001, A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 40123, A
Sequence 7256, Ap
Sequence 76273, A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 830, App
                                                                                                     (without alignments)
1754.839 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Appli
                                                                                                                                                                                                                                                                                                                                                                                                                            /EMC_Celerra_SIDS3/ptodata/1/pubpna/US09_NEW_PUB.seq:*
/EMC_Celerra_SIDS3/ptodata/1/pubpna/US06_NEW_PUB.seq:*
/EMC_Celerra_SIDS3/ptodata/1/pubpna/US07_NEW_PUB.seq:*
/EMC_Celerra_SIDS3/ptodata/1/pubpna/US08_NEW_PUB.seq:*
/EMC_Celerra_SIDS3/ptodata/1/pubpna/US08_NEW_PUB.seq:*
/EMC_Celerra_SIDS3/ptodata/1/pubpna/US10_NEW_PUB.seq:*
/EMC_Celerra_SIDS3/ptodata/1/pubpna/US10_NEW_PUB.seq:*
/EMC_Celerra_SIDS3/ptodata/1/pubpna/US11_NEW_PUB.seq:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8020
                                                                                                                                                                            1 atggetteetetgteattte......eggegteaeegttgtaetaa 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence
GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
                                                                                    May 30, 2006, 01:24:28 ; Search time 44 Seconds
                                                                                                                                                                                                                                                                                   485192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-953-349-10521

US-10-953-349-8894

US-11-217-529-6134

US-11-297-697-312

US-11-217-529-71187

US-11-217-529-71187

US-11-217-529-1832

US-10-953-349-40123

US-10-953-349-40123

US-11-295-697-830

US-11-295-697-830

US-11-295-697-830

US-11-217-529-80201

US-11-215-8386-22

US-11-236-836-22

US-11-236-836-23

US-11-236-836-23

US-11-236-836-23

US-11-236-836-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-11-293-697-438
US-11-217-529-77669
US-11-217-529-78001
                                                                                                                                                                                                                                                                           Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                   Published Applications NA New:*
                                                                                                                                                                                                                                                   242596 segs, 56442199 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SUMMARIES
                                                                                                                                                                                                                                                                                                                                                       Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                        - nucleic search, using sw model
                                                                                                                                                                                                      IDENTITY NUC
Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                            Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        B
                                                                                                                                             US-10-718-311-7
684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            336
2586
807
1801
711
3449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  459
1584
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                450
9399
11918
12023
13042
13147
13147
                                                                                                                                                             Perfect score:
                                                                                                                                                                                                      Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        30.4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              28.8
                                                       OM nucleic
                                                                                                                                                                              Seguence:
                                                                                                                                                                                                                                                   Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                   Database
                                                                                    Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š.
```

ĸ	ce 10879	ce 792, #	ce 1227, i	ce 9573, A	ce 473, Ap			ce 32909, 1	ce 40081, A	ce 5, Appli		155		se 174132,	ce 35133, A	ce 11108, A	SENERAL INFORMATI	ce 11985, A	ce 174376,
Sequence	Seguence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Sequence	Seguence	Seguence	Sequence	Sequence	Sequence	Sequence	Sequence	GENERA	Sequence	Sequence
US-10-488-619-2571	US-10-953-349-10879	US-10-505-928-792	US-11-217-529-1227	US-10-953-349-9573	US-11-217-529-473	US-10-473-173-56	US-10-953-349-13607	US-10-953-349-32909	US-10-953-349-40081	US-11-311-555-5	US-11-311-561-5	US-11-101-316-155	US-11-217-529-75586	US-11-217-529-174132	US-10-953-349-35133	US-10-953-349-11108	US-10-489-730-10	US-10-953-349-11985	US-11-217-529-174376
9	9 1	71 6	10 7	9 89	18 7	9 2	9 5	4 6	9 9	7	7	7 0	7 89	2 7	9 /	9 03	11 6	549 6	774 7
5	140	22.	324	106	3738	395	143	171	72	132	132	1320	256	612	1157	1760	138941	54	77
4.1	4.1	4.1	4.1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.9	3.9	3.9	3.9	3.9	3.9
28.2	28.5	28	28	27.6	27.6	27.6	27.4	27.4	27.2	27.2	27.2	27.2	27.2	27	27	27	27	26.8	26.8
26	21	28	59	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45

ALIGNMENTS

```
APPLICANT: ALEXANDROV, Nickolai et al.

TITLE OF INVENTION: SEQUENCE-DETERMINED DNA FRAGMENTS AND CORRESPONDING POLYPEPTIDES
TITLE OF INVENTION: BROONDED THERBY
FILE REFERENCE: 2750-1579PUS2
CURRENT APPLICATION NUMBER: US/10/953,349
CURRENT FILING DATE: 2004-09-30
NUMBER OF SEQ ID NOS: 40252
SOFTWARE: PATENTIN Version 3.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 8894, Application US/10953349
; Publication No. US20060107345A1
; GENERAL INFORMATION:
; APPLICANT: ALEXANDROY, Nickolai et al.
; TITLE OF INVENTION: SEQUENCE-DETERMINED DNA FRAGMENTS AND CORRESPONDING POLYPEPTIDES
; TITLE OF INVENTION: ENCONDED THERBY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 AGCATGGTTGCACCTTTCACTGGTCTCCAAATCTTCAGCCACTTTCCCTGTTACAAAAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           86 ACCATGGTCGCTCCATTCACTGGTTTGAAGTCATCCGCTTCTTTCCCGGTCACCCGCAAG 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 146 GCCAACAACGACATTACTTCCATCACAAGCAATGGGGGAAGAGTTAGCTGCATGAAGGTG 205
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   32 ATGGCTTCCTCTATGCTCTCTCTCTGCGCTGTGCTTAC-----CTCCCCGGCTCAAGCC 85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
12.5%; Score 85.2; DB 6; Length 718;
Best Local Similarity 70.7%; Pred. No. 1e-19;
Matches 130; Conservative 0; Mismatches 48; Indels
Sequence 10521, Application US/10953349
Publication No. US20060107345A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORGANISM: Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGGC 209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181 TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-953-349-10521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-953-349-8894
                                                                                                                                                                                                                                                                                                                                                                                                SEQ ID NO 10521
LENGTH: 718
```

```
1677 IGGITCACTCTGCTTTTGATTCAGAAGCTCTTTCCCTACCCAGCAAGACTACTTTCTT 1736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     203 chgrcachdeaachrchchadaghthchrcaachachthachthchadahchrch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           65 TGGTTGCACCTTTCACTGGTCTCCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAGCAAA 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         263 cretracarctreraceaageceaarctrerrerrerececaactecraaaaageac 322
          Sequence 6134, Application US/11217529
Publication No. US20060099612A1
GENERAL INFORMATION:
APPLICANT: SUNTORY LIMITED
APPLICANT: NAKAO, YOSHIHIRO
APPLICANT: NAKAO, YOSHIHIRO
APPLICANT: NAKAMIRA, NORIHISA
APPLICANT: NAKANIRA, TOMOKO
APPLICANT: ASHIKARI, TOMOKO
APPLICANT: ASHIKARI, TOMOKO
APPLICANT: ASHIKARI, TOMOKO
APPLICANT: ASHIKARI, TOSHIHIKO
TITLE OF INVENTION NUMBER: US/11/217,529
CURRENT APPLICATION NUMBER: US/11/217,529
CURRENT FILING DATE: 2005-09-02
RICK APPLICATION NUMBER: US/11/217,529
CURRENT APPLICATION NUMBER: US/11/217,529
RICK APPLICATION NUMBER: US/11/217,529
RICK APPLICATION NUMBER: US/11/217,529
RICK APPLICATION NUMBER: US/11/217,529
RICK APPLICATION NUMBER: US/11/217,529
RICK FILING DATE: 2005-09-02
NUMBER OF SEQ ID NOS: 197023
SOPTWARE: Patentin version 3.3
SOPTWARE: Patentin version 3.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2 TGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5 CITCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCTAGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5.2%; Score 35.6; DB 7; Length 792;
55.7%; Pred. No. 0.012;
iive 0; Mismatches 54; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          30; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 32; DB 7;
Pred. No. 0.35;
0; Mismatches 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 312, Application US/11293697
Publication No. US20060105376A1
GENERAL INFORMATION:
TITLE OF INVENTION: Novel full length CDNA
FILE REPERENCE: H1-A0106
CURRENT APPLICATION NUMBER: US/11/293,697
CURRENT FILING DATE: 2005-12-05
PRIOR APPLICATION NUMBER: US/10/108,260
PRIOR APPLICATION NUMBER: US/10/108,260
PRIOR APPLICATION NUMBER: US/10/108,260
NUMBER OF SEQ ID NOS: 5458
SOFTWARE: Patentin Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; TYPE: DNA; CRGANISM: Saccharomyces pastorianus US-11-217-529-6134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1737 GCCTTCTTTCTATTTTTTTT 1756
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCATGGTTGCACCTTTCACT 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity 62.5%;
Matches 50; Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              68; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: Homo sapiens
US-11-293-697-312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
Matches 68; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            125 AC 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AC 324
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-11-293-697-312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 312
LENGTH: 2144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          323
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ଚ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         පු
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 9569, Application US/10953349

Publication No. US20060107345A1

GENERAL INFORMATION:

GENERAL INFORMATION:

APPLICANT: ALEXANDROW, Nickolai et al.

TITLE OF INVENTION: ENCONDED THERBY

FILE REFRENCE: 2750-15799US2

CURRENT PILING DATE: 2004-09-30

NUMBER OF SEQ ID NOS: 40252

SOFTWARE: Patentin version 3.3

SEQ ID NO 9559
                                                                                                                                                                                                                                                                                                                                                                                                61 AGCATGGTTGCACCTTTCACTGGTCTCCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      107 ACCATGGICGCICCAITCACCGGCTIGAAGICAICCGCIGCAITCCCGGICACCCGCAAG 166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    167 ACCAACAAGACATCACTTCCATGGAAGCAACGGGGAAAGAGTTAGCTGCATGAAGGTG 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                47 ATGGCTTCCTCTATGCTCTCTTCCGCTACTATGGTTGC-----CTCTCCGGCTCAGGCC 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              101 ACTATGGTCGCTCCTTTCAACGGACTTAAGTCCTCCGCTGCCTTCCCAGCCACCGCAAG 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 ATGCCTCCTCTCTCATTTCTTCAGCAGCTGTTGCCACACGCAGCATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 10.9%; Score 74.4; DB 6; Length 799; Best Local Similarity 66.7%; Pred. No. 5.6e-16; Matches 124; Conservative 0; Mismatches 56; Indels
                                                                                                                                                                                                                                                                     Query Match 12.0%; Score 82; DB 6; Length 743; Best Local Similarity 69.6%; Pred. No. 1.3e-18; Matches 128; Conservative 0; Mismatches 50; Indels
                    CURRENT APPLICATION NUMBER: US/10/953,349
CURRENT FILING DATE: 2004-09-30
NUMBER OF SEQ ID NOS: 40252
SOFTWARE: PatentIn version 3.3
SEQ ID NO 8894
LENGTH: 743
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; TYPE: DNA
; ORGANISM: Arabidopsis thaliana
US-10-953-349-9569
                                                                                                                                                                      ; TYPE: DNA
; ORGANISM: Arabidopsis thaliana
US-10-953-349-8894
FILE REFERENCE: 2750-1579PUS2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181 TGGCAT 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGGCCT 226
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181 TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGGC 230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-953-349-9569
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            221
                                                                                                                                                                                                                                                                                                                                                                                                          .a.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
```

ö

61

RESULT

Gaps

ö

```
요
                                                                                                       ò
                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       77 TCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAGCAAAACCTTGACATCA 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    230 CTCATGGTGATAAAGGCTTGGCCCCGCTGTTTCTTGAAATTCATGCTAACCTTCAGTACC 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9/
Sequence 77187, Application US/11217529

Publication No. US20060099612A1

GENERAL INFORMATION:

APPLICANT: NAVAWURA, WORHIED

APPLICANT: NAVAWURA, WORHIESA

APPLICANT: KODAMA, YUKIKO

APPLICANT: KODAMA, YUKIKO

APPLICANT: ABHIKARI, TOBHIHIKO

TITLE OF INVENTION: METHODS FOR ANALYZING GENES OF INDUSTRIAL YEASTS

FILE REFERENCE: S-38-285

CURRENT APPLICATION NUMBER: US/11/217,529

CURRENT APPLICATION NUMBER: US 10/932,182

PRIOR FILING DATE: 2004-09-02

NUMBER OF SEQ ID NOS: 197023

SOFTWARE: Patentin version 3.3

SEQ ID NO 77187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 1832, Application US/11217529
; Publication No. US20060099612A1
; GENERAL INFORMATION:
; APPLICANT: SUNTORY LIMITED
APPLICANT: NOARMON VOSHHIRO
APPLICANT: RODAMA, YUKIKO
APPLICANT: RODAMA, YUKIKO
APPLICANT: RODAMA, YUKIKO
APPLICANT: PUJIWIRA, TOMOKO
TITLE OF INVENTION: METHODS FOR ANALYZING GENES OF INDUSTRIAL YEASTS
FILE REFERENCE: S-38-285
CURRENT APPLICATION UMBER: US/11/217,529
CURRENT FILING DATE: 2005-09-02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             290 TTACCAAAGAATCGCTCGCCGTTTAATGAAATCTGGGCCAGACTGGCCTGGTCGATGGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                17 TITCTICAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCTAGCATGGTTGCACCTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           170 TCTCCAAACGTAGGAAAAAAAAAAAGGTTTACTCGCAGTCGTTGCATAT 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
4.5%; Score 30.8; DB 7; Length 2586;
Best Local Similarity 50.0%; Pred. No. 1;
Matches 77; Conservative 0; Mismatches 77; Indels 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 31.2; DB 7; Length 336;
Pred. No. 0.23;
0; Mismatches 88; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR APPLICATION DATE: 2005-09-02
PRIOR APPLICATION NUMBER: US 10/932,182
PRIOR FILING DATE: 2004-09-02
NUMBER OF SEQ ID NOS: 197023
SOFTWARE: Patentin version 3.3
LENGTH.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: Saccharomyces pastorianus US-11-217-529-77187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; ORGANISM: Saccharomyces pastorianus US-11-217-529-1832
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity 48.8%;
Matches 84; Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                 DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
```

ઠે

```
APPLICANT: ALEXANDROV, Nickolai et al.
TITLE OF INVENTION: SEQUENCE-DETERMINED DNA FRAGMENTS AND CORRESPONDING POLYPEPTIDES
TITLE OF INVENTION: BROONDED THERBY
FILE REFERENCE: 2750-1579PUS2
CURRENT APPLICATION NUMBER: US/10/953,349
CURRENT FILING DATE: 2004-09-30
NUMBER OF SEQ ID NOS: 40252
SOFTWARE: Patentin version 3.3
SEQ ID NO 40123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 7256, Application US/10953349
Publication No. US20060107345A1
GENERAL INFORMATION:
THILE OF INVENTION: SEQUENCE-DETERMINED DNA FRAGMENTS AND CORRESPONDING POLYPEPTIDES
TITLE OF INVENTION: ENCONDED THERBY
FILE REFERENCE: 2756-1579PUS2
CURRENT APPLICATION NUMBER: US/10/953,349
CURRENT FILING DATE: 2004-00-30
NUMBER OF SEQ ID NOS: 40252
SOFTWARE: Patentin version 3.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
216 AGATTCCATCAAGACTCAGCAATTTGCCCAGCGTTGGATCGCACAAGTCAGCCTGATGC 275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        276 CTCTTTCCACATATAAATAGTGGAACTTTCACAGCACGGAGATTAACATCTTTGCTTG 217
                                                                                  191 CACACCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATCCCTGCCCTGG 250
                                                                                                                                      276 CAAGGCTCAAATTAAAGCCAACGCCTCACTGCGTTGGTCTCCATAGAACCCCGTATAGC 335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              159 AAGAGTTAGCTGCATGCAGGTGTGGCATATGTCACACCCCGCGTTAACGCAACTGCGTGC 218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 216 cadroggadocrargaarotrongagicnocaacococoroginos 216 cadrogginos 216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     99 CACTITICCCTGTTACAAAGAAGCAAAACCTTGACATCACTTCCATTGCTAGCAATGGTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCTAGCAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 807;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                85; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ;
9
                                                                                                                                                                                                                                            336 AAACGCTGCAGCTCAATTGATCGCTGCTATAGCA 369
                                                                                                                                                                                            251 ATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGA 284
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
4.4%; Score 30; DB 6;
Best Local Similarity 48.8%; Pred. No. 1.6;
Matches 81; Conservative 0; Mismatches 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 30.4; DB Pred. No. 0.71;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Mismatches
                                                                                                                                                                                                                                                                                                                         ORGANISM: Zea mays subsp. mays US-10-953-349-40123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           156 GCCATGTTATCTGAAA 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        219 GCTGCGCTATTGTAAA 234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Arabidopsis thaliana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity 51.5%;
Matches 70; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 9
US-10-953-349-7256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-953-349-7256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQ ID NO 7256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORGANISM:
```

ð g ò g

```
Sequence 1043, Application US/11301554
Publication No. US20060088527A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Durham, Margarita
Carter, Darrick
Fanger, Gary R.
Vedvick, Thomas S.
Bangur, Chaitanya S.
McNabb, Andria
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Wang, Tongtong
Watanabe, Yoshihiro
Kalos, Michael D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Henderson, Robert A. APPLICANT: Wang, Tongtong
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sleath, Paul R.
Johnson, Jeffrey C.
Retter, Marc W.
Query Match
Best Local Similarity 54.01
Matches 61, Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity 50.7
Matches 70; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
CORGANISM: Homo sapiens
US-11-301-554-1043
                                                                                                                                                                                                                                                                                                                                                          US-11-301-554-1043
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: Fas
                                                                                                                                                    셤
                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ö
                                                                                                      488 CTTCTGAAGCTAAGTCTTCTTCTGCTGCTCCAAGCTCCACTGAAGCTAAGACAACTTCTG 547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAGCAAA 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   548 CTGCTCCAAGCTCCACTGGTGCCAAGACCTCTGCCATCTCTCAAATTACCGATGGTCAAA 607
          20 TTCCTTGTTCAACCCTCGAGAGATTACGGATAGTGAAAGAGAAGCTACAAAATTTCCCAA 79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      5 CTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCTAGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:

APPLICANT: SUNTORY LIMITED
APPLICANT: NAKAO, YOSHHIRO
APPLICANT: NAKAO, YOSHHIRO
APPLICANT: NOAMA, YUKIKO
APPLICANT: FUJIMIRA, NORIHISA
APPLICANT: FUJIMIRA, TOMOKO
APPLICANT: ASHIKATI, TOSHHIRO
APPLICANT: ASHIKATI, TOSHHIRO
APPLICANT: ASHIKATI, TOSHHIRO
TITLE OF INVENTION: METHODS FOR ANALYZING GENES OF INDUSTRIAL YEASTS
FILE REFERENCE: S-38-285
CURRENT APPLICATION NUMBER: US/11/217,529
CURRENT FILING DATE: 2005-09-02
PRIOR PILING DATE: 2004-09-02
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
4.4%; Score 29.8; DB 7; Length 711;
Best Local Similarity 49.1%; Pred. No. 1.1;
Matches 79; Conservative 0; Mismatches 82; Indels
                                                                                                                                                                                        140 TCTTGTGAAACTGCAACTGTGATCCATGGCGGAGGATATGGCTGC 185
                                                                                                                                                       126 CCTTGACATCACTTCCATTGCTAGCAATGGTGGAAGAGTTAGCTGC 171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    125 ACCTTGACATCACTTCCATTGCTAGCAATGGTGGAAGAGTT 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  608 rccaagcraccaaggcrgrrrcrgaggaagaagaaggr 648
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 830, Application US/11293697
Publication No US2006010537641
GENERAL INFORMATION:
APPLICANT: HELIX RESEARCH INSTITUTE
TITLE OF INVENTION: Novel full length cDNA
FILE REFRENCE: H1-AD106
CURRENT APPLICATION NUMBER: US/11/293,697
CURRENT FILING DATE: 2005-12-05
PRIOR PELING DATE: 2005-12-05
NUMBER OF SEQ ID NOS: 5458
SOFTWARE: Patentin Ver. 2.1
LENGTH: 3449
                                                                                                                                                                                                                                                                                                                           Sequence 76273, Application US/11217529
Publication No. US20060099612A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ) ORGANISM: Saccharomyces pastorianus US-11-217-529-76273
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NUMBER OF SEQ ID NOS: 197023
SOFWARE: Patentin version 3.3
SEQ ID NO 76273
LENGTH: 711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA
CRGANISM: Homo sapiens
US-11-293-697-830
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 11
US-11-293-697-830/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9
                                                        99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: DNA
```

셤 ઠે 셤 ઠે ద

ઠ

```
ö
                                                                                                                                                                                                                      1379 CTTCTTTAACGTTATCACACACATACACACATACAAAGGAGCAGCACCAGTACATCTACT 1320
                                                                                                                                                   80 CIGGICTCAAAICTICAGCCACTITCCCTGTTACAAAGAAGCAAAACCTTGACATCACTT 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 253 CCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAACAGCAG 312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                               1319 caacriccaargaaaaraaagaraccarcaaaacrirgaaracrica 1267
                                                                                                                                                                                                                                                                                            140 CCATTGCTAGCAATGGTGGAAGAGTTAGCTGCATGCAGGTGTGGCATATGTCA 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Remaining Prior Application data removed - See File Wrapper or PALM. NUMBER OF SEQ ID NOS: 2157
                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
4.4%; Score 29.8; DB 7; Length 3449; 54.0%; Pred. No. 2.7; tive 0; Mismatches 52; Indels 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4.3%; Score 29.2; DB 7; Length 459; 50.7%; Pred. No. 1.3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR THE THERAPY TITLE OF INVENTION: AND DIAGNOSIS OF LUNG CANCER PILE REPERENCE: 210121.478C21
CURRENT APPLICATION NUMBER: US/11/301,554
CURRENT FILING DATE: 2005-12-13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR FELING DATE: 2002-10-28
PRIOR FELING DATE: 2002-10-28
PRIOR PELING DATE: 2002-10-28
PRIOR APPLICATION NUMBER: US 10/113,872
PRIOR APPLICATION NUMBER: US 0/1017,754
PRIOR PILING DATE: 2001-10-29
PRIOR FILING DATE: 2001-10-29
PRIOR FILING DATE: 2001-07-10
PRIOR PELICATION NUMBER: US 09/849,626
PRIOR APPLICATION NUMBER: US 09/736,457
PRIOR APPLICATION NUMBER: US 09/736,457
PRIOR PELING DATE: 2000-10-13
PRIOR PELING DATE: 2000-10-30
PRIOR PELING DATE: 2000-10-30
PRIOR PELING DATE: 2000-10-30
PRIOR PELING DATE: 2000-10-30
PRIOR PELING DATE: 2000-10-30
PRIOR PELING DATE: 2000-10-30
PRIOR PELING DATE: 2000-10-30
PRIOR PELING DATE: 2000-10-30
PRIOR PELING DATE: 2000-10-66
PRIOR PELING DATE: 2000-10-66
PRIOR PELING DATE: 2000-0-06
PRIOR PELING DATE: 2000-0-06
PRIOR PELING DATE: 2000-0-06
PRIOR PELING DATE: 2000-0-06
PRIOR PELING DATE: 2000-0-06
PRIOR PELING DATE: 2000-0-06
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FastSEQ for Windows Version 4.0
```

```
MAME/KEY: misc_feature
i LOCATION: 21, 22, 230, 232, 377, 391
corner in FORMATION: n = A,T,C or G
US-11-301-554-1056
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               373 GAAGAACTGCCGCTGCTG 390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         244 GAGGITCIGGACNINCIG 227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GBV-A-like virus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 15
US-11-236-836-2/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQ ID NO 2
LENGTH: 9399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-11-236-836-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: DNA ORGANISM: (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ö
313 GGAAAAACGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAAATCCCC 372
                                         156 AAAGAGGGGCTCCGGGTGAGAAGGTGAAGGAGGCCCTCCTGGAGTTGCAGGACCCCCTG 215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      349 TITGICGAGCAGAATGAAATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTAC 408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 TTTGAAGAGCAATACCAAAGTGACCGAACTTTTACAATCACTCGCGAATGATTTCATATTC 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 ATGCCGGAGATTTATGGACCTCAGCCATTAAAGCCACTCAATACGGTGATGAGACATGGG 60
                                                                                                                                                                                                                                Sequence 80201, Application US/11217529

Publication No. US20060099612A1

GENERAL INFORMATION:

APPLICANT: SUNTORY LIMITED

APPLICANT: NAKAO, YOSHIHIRO

APPLICANT: NAKAO, YOSHIHIRO

APPLICANT: NAKAURA, YUKINO

APPLICANT: NAKAURA, YUKINO

APPLICANT: ASHIKARI, TOSHIHIRO

APPLICANT: ASHIKARI, TOSHIHIKO

TITLE OF INVENTION: METHODS FOR ANALYZING GENES OF INDUSTRIAL YEASTS

FILE REFERENCE: 5-38-285

CURRENT APPLICATION NUMBER: US/11/217,529

CURRENT APPLICATION NUMBER: US/11/217,529

FILE REPERENCE: 2.38-285

CURRENT APPLICATION NUMBER: US 10/932,182

PRIOR APPLICATION NUMBER: US 10/932,182

PRIOR PILING DATE: 2004-09-02

NUMBER OF SEQ ID NOS: 197023

SEQ ID NO 80201

LENGTH: 1584
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 289 ATGACAAAACGTTTTGAACAGCAGGGAAAAACGGTAAGCGTGACGATGATGCTGCGCGAAGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ô
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
4.2%; Score 29; DB 7; Length 1584;
Best Local Similarity 51.1%; Pred. No. 3.2;
Matches 68; Conservative 0; Mismatches 65; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: Bangur, Chaitanya S.
APPLICANT: McNabb, Andria
TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR THE THERAPY
TITLE OF INVENTION: AND DIAGNOSIS OF LUNG CANCER
FILE REFERENCE: 210121.478C21
CURRENT APPLICATION NUMBER: US/11/301,554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 1056, Application US/11301554
Publication No. US20060088527A1
GENERAL INFORMATION:
APPLICANT: Henderson, Robert A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ORGANISM: Saccharomyces pastorianus US-11-217-529-80201
                                                                                    373 GAAGAACTGCCGCTGCTG 390
                                                                                                                              216 chagartchcaacchchic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Wang, Tongtong
Matanabe, Yoshihiro
Kalos, Michael D.
Johnson, Paul R.
Johnson, Jeffrey C.
Retter, Marc W.
Durham, Margarita
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Fanger, Gary R.
Vedvick, Thomas S.
Bangur, Chaitanya S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           409 TGGTTACGTGAAA 421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      121 TACTTTGATGATA 133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Darrick
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Carter,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-11-301-554-1056/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA
                                           셤
                                                                                       8
                                                                                                                           g
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
```

```
253 CCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAACAGCAG 312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              364 CAGGACCTGCTGGTTTCCCTGGTGCTCCTGGACAGAATGGTGAACCTGGTGGTAAAGGAG 305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                313 GGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAAATCCCC 372
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              304 AAAGAGGGCTCCGGGTGAGAAAGGTGAAGGAGGCCCTCCTGGAGTTGCAGGACCCCCTG
Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
4.2%; Score 28.8; DB 7; Length 450;
Best Local Similarity 50.0%; Pred. No. 1.8;
Matches 69; Conservative 0; Mismatches 69; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 2, Application US/11236836

Publication No. US20060105365A1

GENERAL INFORMATION;

APPLICANT: MARTIN, Annette

APPLICANT: CHIBAUDO, David

APPLICANT: COHEN, Lisette

APPLICANT: LEMON, STANLEY M.

TITLE REFERENCE: UTSG:27008

CURRENT FILING DATE: 2005-09-27

PRIOR PILING DATE: 2005-09-27

PRIOR PILING DATE: 2006-09-27

NUMBER: OF SEQ ID NOS: 27

SOFTWARE: PATENTIN OFF: 2010-09-27

NUMBER: OF SEQ ID NOS: 27
```

ö

ö Query Match
4.2%; Score 28.8; DB 7; Length 9399;
Best Local Similarity 69.6%; Pred. No. 10;
Matches 39; Conservative 0; Mismatches 17; Indels 0; Gaps

ò Op

Search completed: May 30, 2006, 04:14:20 Job time : 44 secs

```
CL666350 13.2 bp DNA linear GSS 09-JUL-2004 PRI0152b_A03 - PRI0152b_B21 (832) Mixed stage fosmid library of P. pacificus var. California Pristionchus pacificus genomic, genomic
                                                                                                                          EST280749
EST252018
EST285250
EST283482
EST474295
EST286761
EST286761
                                                                                                                                                                                                                                                                                                               EST548798
EST287896
EST358923
EST283928
                                                       EST254648
EST325266
                                                                                                                                                                                                                                                                           EST549590
EST280836
                                                                                                                                                                                                                                                                                                                                                                                                                          EST510878
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /db xref="taxon:54126"
/clone lib="Mixed stage fosmid library of P. pacificus
var. California"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kahlow, U., Geisler, R. and Sommer, R.J. for the nematode satellite organism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Evolutionary Biology
Max-Planck-Institute for Developmental Biology
Max-Planck-Institute for Developmental Biology
Max-manny: 37-39, Tuebingen D-72076, Germany
Tel: 00497071601371
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 00497071601498
Fax: 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pristionchus pacificus
Pristionchus pacificus
Eukaryota; Metasca; Nematoda; Chromadorea; Diplogasterida;
Neodiplogasteridae; Pristionchus.
                                                                      BE463004
AW093805
BG123527
                                                                                                                                                                                                  BG128649
AW217063
AW093581
BM535307
                                                                                                                                                                AW092154
AW040522
                                                                                                                                                                                                                                                                                            AW038880
BI928909
                                                                                                                            AW038793
AI777051
                                                                                                                                                                                                                                                                                                                                                                                                           BG133589
                                                                                                                                                                                                                                                                                                                                                                                                                            BG642684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 832;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'note="Vector: pEpifos-5 Fosmid vector
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1. .832
Oxganism="Pristionchus pacificus"
/mol_type="genomic DNA"
/strain="California"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pristionchus pacificus
Nucleic Acids Res. 32 (1), D421-D422 (2004)
14681447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 (bases 1 to 832)
Srinivasan, J., Otto, G.W., Kahlow, U.,
AppaDB: an AcedB database for the nem
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      53.1%; Score 363;
                   BI927635
AW039845
                                                     A1773548
BE463004
AW03205
AW038793
AW038793
AW04052
BG128649
BG128649
AW217063
AW0335307
BI925307
                                                                                                                                                                                                                                                                                          AW038880
B1928909
AW094716
AW943080
AW041064
AW443412
BG133589
BG642684
                                                                                                                                                                                                                                                                                                                                                                                                                                             AI775340
AW041189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Burvey sequence.
CL666350
CL666350.1 GI:50159025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Contact: Sommer RJ
 9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

9333

Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 1
CL666350/c
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    JOURNAL
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE
 ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CL687382 PRI0146c_B8462847 EST328226AW039464 EST281745AW039041 EST281014AW041024 EST28707881AW034122 EST2873028AU773928 EST255028AU773928 EST255028AU773928 EST255028AU773928 EST255028B191188 EST324752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EST282749
EST280153
EST285193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CL666350 PRI0152b
                                                                                                                                           (without alignments)
8528.166 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EST287271
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                       1 atggcttcctctgtcatttc......cggcgtcaccgttgtactaa 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AW037811 E
AW040243 E
AW038470 E
AW092013 E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AW094091 I
BF051382
                                                                                                                      May 30, 2006, 01:04:24 ; Search time 4485 Seconds
                 GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
                                                                                                                                                                                                                                                                                                                                                                   96473596
                                                                                                                                                                                                                                                                                                                             48236798 segs, 27959665780 residues
                                                                                                                                                                                                                                                                                                                                                               Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                     nucleic search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AW442951
AW037699
AW094122
AI773928
AI773502
BI91188
BE462486
AW094091
BF051382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AW039041
AW041024
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AW040243
AW038470
AW092013
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BE462847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AW037811
                                                                                                                                                                                                                                                                       IDENTITY_NUC
Gapop 10.0 , Gapext 1.0
                                                                                                                                                                                                                                                                                                                                                                                                       seq length: 0
seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                 US-10-718-311-7
684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9b_est1::
9b_est3::
9b_est5::
9b_est5::
9b_est7::
9b_est7::
9b_est8::
9b_gss1::
9b_gss1::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         233
238
250
260
260
267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      279
279
286
288
288
329
330
330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EST: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9.
110.
113.
143.
                                                                                                                                                                                               Title:
Perfect score:
                                                                                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Minimum DB
Maximum DB
                                                                                  OM nucleic
                                                                                                                                                                                                                                     Sequence:
                                                                                                                                                                                                                                                                                                                               Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Database
                                                                                                                        Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Š.
```

υ

ô

Gaps

246

651

а ò 셤 ò 쉽 ò 원 ò a ò g ò 음

```
EST 18-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Lycopersicon esculentum (Solanum lycopersicum)
Lycopersicon esculentum
Eukaryota, Viridiplantae, Streptophyta; Embryophyta; Tracheophyta;
Bekaryota, Viridiplantae, Streptophyta; edicotyledons;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons;
asterids; lamiids; Solanales; Solanaceae; Solanum; Lycopersicon.
1 (Dases 1 to 205)
1 (Dases 1 to 205)
Liang, F., Hansen, T., Czaven, M.B., Bowman, C.L., Holt, I.E.,
Liang, F., Hansen, T., Czaven, M.B., Bowman, C.L., Ronning, C.M.,
Mierman, W., Fraser, C.M., Martin, G.B., Giovannoni, J.J. and
                                                                                                                                                             CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 306
                                                                                                                                                                                                                                         CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 366
                                                                                                                                                                                                                                                                               cagcadegaaaaacegraacegreacearearcegeeaacegrregeegeagaareaa 711
                                                                                                                                                                                                                                                                                                                        ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG 426
                                                                                                                                                                                                                                                                                                                                                           Arcecegaagaacrececrececaaagagrerecrracregrracergaaarrrre 771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT 60
                                                                                                                                                                                                                                                                                                                                                                                                       TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACG 483
                                                                                                                                                                                                                                                                                                                                                                                                                       CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                         205 bp mRNA linear EST 18-M
EST325226 tomato flower buds 0-3 mm, Cornell University
Lycopersicon esculentum cDNA clone cTOA16011, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tankslow, ...

Tankslow, ...

Generation of ESTs from tomato flower tissue, 0-3 mm buds Unpublished (1999)

Contact: CUGI
Clemson University Genomics Institute
Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
Email: http://www.genome.clemson.edu/orders/index.html
                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .
0
    Length 828;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 205;
                                           1; Indels
    DB 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ouery Match 26.9%; Score 184; DB 7; L
Best Local Similarity 100.0%; Pred. No. 2.9e-47;
Matches 184; Conservative 0; Mismatches 0;
  43.2%; Score 295.4; DB 13
99.7%; Pred. No. 8.7e-83;
iive 0; Mismatches 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5 prime sequence.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BE462847.1 GI:9508618
Query Match
Best Local Similarity 99.7
Matches 296; Conservative
                                                                                                                                                             247
                                                                                                                                                                                                  592
                                                                                                                                                                                                                                         307
                                                                                                                                                                                                                                                                                 652
                                                                                                                                                                                                                                                                                                                        367
                                                                                                                                                                                                                                                                                                                                                             712
                                                                                                                                                                                                                                                                                                                                                                                                     427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 3
BE462847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORIGIN
                                                                                  ઠે
                                                                                                                 q
                                                                                                                                                             ð
                                                                                                                                                                                              g
                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CL687382 828 bp DNA linear GSS 09-JUL-2004 PRI0146c_H03_2 - PRI0146c_BR (828) Mixed stage fosmid library of P. pacificus var. California Pristionchus pacificus genomic, genomic
                        ö
                                                                                  832 GTAAGCGTGACGATGATCCCCCGAAGGTTTGTCGAGCAGAATGAAATCCCCGAAGAACTG 773
                                                                                                                                            441
                                                                                                                                                                               713
                                                                                                                                                                                                                                                              653
                                                                                                                                                                                                                                                                                                     561
                                                                                                                                                                                                                                                                                                                                         593
                                                                                                                                                                                                                                                                                                                                                                                  621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 681
                                                                                                                                                                                                                       442 GAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTAAGCGGGCCGGAGCTG 501
                                                                                                                                                                                                                                                                                                                                                                                                                     592 Acccedeactritariteacaraceccereareccedecreredecedeceacerreccecrie 533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /db xref="taxon:54126"
/clone lib="Mixed stage fosmid library of P. pacificus
var. California"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Eukaryota, Metazoa; Nematoda; Chromadorea; Diplogasterida; Neodiplogasteridae; Pristionchus.

1 (bases 1 to 828)
Srinivasan,J., Otto,G.W., Kahlow,U., Geisler,R. and Sommer,R.J. AppaDB: an AcedB database for the nematode satellite organism Pristionchus pacificus
Nucleic Acids Res. 32 (1), D421-D422 (2004)
                                                                                                                                                               772 CCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTGTTATGTGCCGATGGT
                                                                                                                                                                                                                                             ACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGGGCGACGTTCCCGCCTG
                                                              322 GTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAAATCCCCCGAAGAACTG
                                                                                                                                          382 CCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTGTTATGTGCCGATGGT
                                                                                                                                                                                                                                                                                                   GCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTCACATCATCGACATTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCGGCGTCACCGTTGTAC
                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     end
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Email: ralf.gommer@tuebingen.mpg.de
This library was generated at Caltech, Pasadena, USA and
sequenced at Vancouver, Canada.
                          ö
                      Indele
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /note="Vector: pEpifos-5 Fosmid vector"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Evolutionary Biology
Max-Planck-Institute for Developmental Biology
Spemannstr. 37-39, Tuebingen D-72076, Germany
Fax: 00497071601371
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /organism="Pristionchus pacificus"
/mol_type="genomic DNA"
/strain="California"
    Pred. No. 1.8e-104;
Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Seq primer: T7
Class: fosmid ends.
Location/Qualifiers
                    ..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Burvey sequence.
CL687382
CL687382.1 GI:50196135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pristionchus pacificus
Pristionchus pacificus
100.08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Contact: Sommer RJ
                        363; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1. .828
    Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TAA 470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           682 TAA 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    14681447
                                                                                                                                                                                                                                                            712
                                                                                                                                                                                                                                                                                                   203
                                                                                                                                                                                                                                                                                                                                                                                562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOCUS
                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 2
CL687382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
```

Gaps

ORIGIN

ò 요 ò g ઠે g

```
/organism="Lycopersicon esculentum"
/cultivar="RINA"
/cultivar="RINA"
/cultivar="Rio Grande PtoR"
/db xref="taxon:4081"
/clone="CLET10C2"
/tissue Lype="Leaf"
/dev stage="Laft"
/lab_host="XL1-Blue MRF" " licitor, BTI"
/clone lib="tomato mixed elicitor, BTI"
/note="Vector: pBlueScript SK(-); Site_1: EcoR1; Site_2: Xhol; cLFT - Incoulaced with a variety of disease response elicitors: Plants exposed to 2,6 dichloroisonicotinic acid, BTH, jamenic acid, ethylene, fenthion, BIX, okadaic acid, or systemin prior to tissue harvest. EcoRI site was destroyed during cloning."
                                                                                                                                                                                                                  AW039041
EST281014 tomato mixed elicitor, BTI Lycopersicon esculentum cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                               Lycopersicon esculentum (Solanum lycopersicum)
Lycopersicon esculentum
Lycopersicon esculentum
Lycopersicon esculentum
Lycopersicon esculentum
Spermatophyta; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; osterid8; lamid8; Solanale8; Solanaceae; Solanum; Lycopersicon.
L (Bases I to 237)
D'Ascenzo,M., He,X., Lyman,J., Holt,I.E., Liang,F., Upton,J.,
Ronning,C.M., Craven,M.B., Fujii,C.Y., Bowman,C.L., Nierman,W.,
Fraser,C.M., Venter,J.C., Martin,G.B., Tanksley,S.D. and
Giovannoni,J.
Generation of ESTs from tomato leaf tissue
    61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             69 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ..
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
Email: http://www.genome.clemson.edu/orders/index.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             26.9%; Score 184; DB 7; Length 237; 100.0%; Pred. No. 3e-47; ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Contact: CUGI
Clemson University Genomics Institute
                                                                                                                                                                                                                                                        clone cLET10C2, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                             AW039041.1 GI:5897795
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Unpublished (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Local Similarity 100.
Matches 184; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       prime sequence.
                                                                                TGGC 184
                                                                                                                   reec 197
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   189 rĠĠĊ 192
                                                                                181
                                                                                                                   194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                o
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               source
                                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                          ACCESSION
                                                                                                                                                                                                                                                                                           VERSION
KEYWORDS
SOURCE
                                                                                                                                                                             RESULT 5
AW039041
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ORIGIN
                                  g
                                                                                ઠ
                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       235 bp mRNA linear EST 18-MAY-2001 EST281745 tomato mixed elicitor, BTI Lycopersicon esculentum cDNA clone cLET10112, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Lycopersicon esculentum (Solanum lycopersicum)
Lycopersicon esculentum
Lycopersicon esculentum
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons;
asterids; lamiids; Solanales; Solanaceae; Solanum; Lycopersicon.
(Dases I to 235)
D'Ascenzo,M., He,X., Lyman,J., Holt,I.E., Liang,F., Upton,J.,
Ronning,C.M., Craven,M.B., Fujii,C.Y., Bowman,C.L., Nierman,W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AGCATGGTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                          AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 127
                                                                                                                                   CAAAACCTIGACATCACTICCATIGCTAGCAAIGGIGGAAGAGTIGCCTGCAIGCAGGIG 187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      73
1 ATGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACCACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14 AIGSCTICCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Contact: CUGI
Clemson University Genomics Institute
Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
Email: http://www.genome.clemson.edu/orders/index.html
5 prime sequence.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                26.9%; Score 184; DB 7; Length 235; 100.0%; Pred. No. 3e-47; ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Giovannoni,J.
Generation of ESTs from tomato leaf tissue
Unpublished (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                AW039464.1 GI:5898218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match 26.9
Best Local Similarity 100.
Matches 184; Conservative
                                                                                                                                                                                                              TGGC 184
                                                                                                                                                                                                                                                  recc 191
                                                                                                                                                                       128
                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bource
                                                                                                                                                                                                                                                                                                                                                                   DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                            ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                              VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
                                                                                                                                                                                                                                                                                                                               AW039464
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                             RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORIGIN
```

쉽 ò

δ

```
AW442951
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                      TITLE
JOURNAL
COMMENT
                             VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
                                                                                                                                                                                                                                                                                   AUTHORS
ACCESSION
                                                                                                                                                                                                                                                  REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 8
AW037699
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /clone_lib="comato mixed elicitor, BTI"
//note="Vector: pBlueScript SK(-); Site_1: EcoR1; Site_2:
//note="Vector: pBlueScript SK(-); Site_1: EcoR1; Site_2:
//note="Vector: plants exposed to 2,6 dichloroisonicotinic
elicitors: plants exposed to 2,6 dichloroisonicotinic
acid, BTH, jasmonic acid, ethylene, fenthion, BIX,
okadaic acid, or systemin prior to tissue harvest. EcoRI
site was destroyed during cloning."
                                                                                                                            EST 18-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                        Lycopersicon esculentum by the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the bull of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       79 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
                                                                                                                      238 bp mRNA linear EST 18-MAY-20 tomato mixed elicitor, BTI Lycopersicon esculentum cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 ATGCCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        100 Jordan Hall, Clemson, SC 29634, USA
Email: http://www.genome.clemson.edu/orders/index.html
5 prime sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 238;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /organism="Lycopersicon esculentum"
/wol type="mRNA"
/wol type="mRNA"
/wol xref="texcon:4081"
/clone="cLET615"
/tissue_type="leaf"
/dev stage="texcon:4081"
/lab_host="texcon:4081"
                                                                                                                                                                                                                                                                                                                 Lycopersicon esculentum (Solanum lycopersicum)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   26.9%; Score 184; DB 7;
100.0%; Pred. No. 3e-47;
ive 0; Mismatches 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Contact: CUGI
Clemson University Genomics Institute
                                                                                                                                                                             clone cLET615, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                  AW041024.1 GI:5899778
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Clemson University
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        184; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TGGC 202
                                                                                                                                                          EST283888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                          SOURCE
ORGANISM
                                                                                                                                                   DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                     ACCESSION
                                                                                                                                                                                                                                            VERSION
KEYWORDS
                                                                                        AW041024
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
```

mRNA linear EST 18-MAY-2001 BTI Lycopersicon esculentum cDNA

AW442951 250 bp EST307881 tomato mixed elicitor, B clone cLET42H11 5', mRNA sequence.

LOCUS

AW442951

```
/note=_veron: DBlueScript SK(-); Site 1: BcoR1; Site 2: Xho1; cLBT - Inoculated with a variety of disease response elicitors. Plants exposed to 2,6 dichloroisonicotinic acid, BTH, jasmonic acid, ethylene, fenthion, BIX, okadaic acid, or systemin prior to tissue harvest. BcoRI site was destroyed during cloning."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mRNA linear EST 18-MAY-2001
BTI Lycopersicon esculentum cDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                        Lycopersicon esculentum

Eukaryota, Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons;
asterids; lamiids; Solanales; Solanaceae; Solanum; Lycopersicon.

1 (bases 1 to 250)

D'Ascenzo, M., He,X., Lyman,J., Matern,A.L., Vision,T., Holt,I.E.,
Liang,F., Hansen,T.S., Roming,C.M., Craven,M.B., Bowman,C.L.,
Nierman,W., Fraser,C.M., Venter,J.C., Tanksley,S.D.,
Glovannoni,J.J. and Martin,G.B.
Unpublished (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            66 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Lycopersicon esculentum (Solanum lycopersicum)
Lycopersicon esculentum
Eukaryota; Viridiplantum
Supermatophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6 Arggerrecreterarrecreaceacererreceaceaceaceargranger
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ö
                                                                                                                                                                                                                                                                                                                                                                                                                         Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
Email: http://www.genome.clemson.edu/orders/index.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length 250;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /clone_lib="tomato mixed elicitor, BTI"
                                                  Lycopersicon esculentum (Solanum lycopersicum)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /organism="Lycopersicon esculentum"
/mol_type="mRNA"
/cultivar="Rio Grande PtoR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26.9%; Score 184; DB 7; L
100.0%; Pred. No. 3.1e-47;
ive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /tissue_type="leaf"
/dev_stage="4-6 week old plants"
/lab_host="XL1-Blue_MRF'"
                                                                                                                                                                                                                                                                                                                                                                       Contact: CUGI
Clemson University Genomics Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           260 bp
EST279328 tomato mixed elicitor,
clone cLET4M17, mRNA sequence.
AW037689
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /db_xref="taxon:4081"
/clone="cLET42H11"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
AW442951.1 GI:6985133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GI:5896453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches 184; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               prime sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ....250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AW037699.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181 TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VERSION
KEYWORDS
SOURCE
ORGANISM
```

```
/organism="Lycopersicon esculentum"
/mol_type="mRNA"
/cultivar="kio Grande PtoR"
/db xref="taxon:4081"
/clone="cLET27G20"
/tissue_type="leaf"
/dev stage="46 week old plants"
/clone="Lib="tomato mixed elicitor, BTI"
/clone="Lib="tomato mixed elicitor, BTI"
/note="Verc: pBlueScript SK(-); Site_1: EcoR1; Site_2: Note="Verc: pBlueScript SK(-); Site_1: EcoR1; Site_2: Short; cLET - Incoulated with a variety of disease response elicitors: Plants exposed to 2,6 dichloroisonicotinic acid, BTH, jamenoic acid, ethylene, fenthion, BIX, okadaic acid, or systemin prior to tissue harvest. EcoRI site was destroyed during cloning."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 267 bp mRNA linear EST 18-MAY-2001
ESTS55028 tomato resistant, Cornell Lycopersicon esculentum cDNA
Clone cLER8L7, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lycopersicon esculentum (Solanum lycopersicum)
Lycopersicon esculentum
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Bukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons;
1 (bases 1 to 267)
1 (bases 1 to 267)
1 (bases 1 to 267)
1 Liang, F., Upton, J., Ronning, C.M., Matern, A.L., Vision, T., Holt, I.E.,
Liang, F., Upton, J., Ronning, C.M., Craven, M.B., Fujii, C.Y.,
Giovannoni, J. J. and Martin, G.B.
Generation of ESTS from Pseudomonas resistant tomato
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  66 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATGCCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAACGTTACACAAGCT
                   Contact: CUGI
Clemson University Genomics Institute
Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
Email: http://www.genome.clemson.edu/orders/index.html
5 prime sequence.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
Email: http://www.genome.clemson.edu/orders/index.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 260;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 184; DB 7; I
Pred. No. 3.1e-47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26.9%; Sco...
100.0%; Pred. No. ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Clemson University Genomics Institute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AI773928.1 GI:5271969
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Best Local Similarity 100.
Matches 184; Conservative
                                                                                                                                                                                       1, .260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5 prime sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             186 TGGC 189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RESULT 10
AI773928
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE
JOURNAL
COMMENT
    JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AUTHORS
                                                                                                                                                                      FEATURES
                           COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /tissue type="1ast"
/dev_stage="4-6 week old plants"
/lab host="XL1-Blue MRF"
/clone_lib="tomato mixed elicitor, BTI"
/note="Vector: BlueScript SK(-); Site_1: EcoRl; Site_2:
Xhol; cLET - Inoculated with a variety of disease response elicitors. Plants exposed to 2,6 dichloroisonicotinic acid, BTH, jasmonic acid, ethylene, fenthion, EIX, cokadaic acid, or systemin prior to tissue harvest. EcoRI site was destroyed during cloning."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EST 18-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Dycopersicon esculentum (Solanum lycopersicum)
Lycopersicon esculentum
Eukaryoza, Viridiplantae, Streptophyta; Embryophyta; Tracheophyta;
Eukaryoza, Viridiplantae, Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons;
asterids; lamiids; Solanales; Solanaceae; Solanum; Lycopersicon.
1 (bases 1 to 260)
D'Ascenzo, M., He, X., Lyman, J., Holt, I.E., Liang, F., Upton, J.,
Ronning, C.M., Craven, M.B., Fujii, C.Y., Bowman, C.L., Nierman, W.,
Giovannoni, J.
Generation of ESTs from tomato leaf tissue
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      72 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAGAAG 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AM094122 ST 18-WAY-200 EST287302 tomato mixed elicitor, BTI Lycopersicon esculentum cDNA clone cLET27G20, mRNA sequence.
asterids; lamiids; Solanales; Solanaceae; Solanum; Lycopersicon.
                   1 (bases 1 to 260)
D'Ascenzo, M., He, X., Lyman, J., Holt, I.B., Liang, F., Upton, J.,
Ronning, C.M., Craven, M.B., Fujii, C.Y., Bowman, C.L., Nierman, W.,
Fraser, C.M., Venter, J.C., Martin, G.B., Tankeley, S.D. and
Glovannoni, J.
Generation of ESTs from tomato leaf tissue
Unpublished (1999)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        12 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACCACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .
0
                                                                                                                                                                                    Contact: CUGI
Clemson University Genomics Institute
Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
Email: http://www.genome.clemson.edu/orders/index.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 260;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                            /organism="Lycopersicon esculentum"
/mol_type="mRNA"
/cultivar="Rio Grande PtoR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match 26.9%; Score 184; DB 7; L
Best Local Similarity 100.0%; Pred. No. 3.1e-47;
Matches 184; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    db_xref="taxon:4081"/clone="cleT4M17"
                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
1. .260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AW094122.1 GI:6059717
                                                                                                                                                                                                                                                                                                                prime sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TGGC 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181 TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AW094122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCUS
DEFINITION
                                                                                                                                        TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM
                   REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 9
AW094122
                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                       COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
```

ö

Gaps

ö

```
B1931188 2.79 bp mRNA linear EST 18-OCT-2001 EST551077 tomato flower, 8 mm to preanthesis buds Lycopersicon esculentum cDNA clone cTOC19C6 5' end, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                         AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                        65 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lycoperation esculentum (Solanum lycopersicum)
Lycoperation esculentum
Eukaryota, Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; eudicotyledons; core eudicotyledons;
Spermatophyta; aunidas; Solanales; Solanaceae; Solanum; Lycopersicon.

1 (bases 1 to 279)
Van der Hoeven, R.S., Bezzerides, J.L., Karamycheva, S.A., Tsai, J.,
Van der Hoeven, R.S., Ronning, C.M., Nierman, W., Fraser, C.M.,
Martin, G.B., Giovannoni, J.J. and Tankeley, S.D.
Generation of ESTs from tomato flower tissue, buds 8 mm -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /tissue_type="flower"
/dev_stage="buds 8mm to preanthesis"
/done_lib="tomato_flower, 8 mm to preanthesis buds"
/clone_lib="tomato_flower, 8 mm to preanthesis buds"
/note="Vector: pBluescript SK(-); Site_l: EcoRI; Site_2:
XhoI; supplier: Cornell University; sequencing: The
Institute for Genomic Research; Flower buds and flowers
were taken from greenhouse plants (4-8 wks old, TA496).
They were immediately frozen in liquid nitrogen and then
size-separated while remaining frozen."
/lab_host="SOLR"
/clone lib="tomato resistant, Cornell"
/note="Vector: pBlueScript SK(-); Site_1: EcoRl; Site_2:
Xhoi; cLER - Tomato Pseudomonas Resistant EST Library.
Directionally cloned cDNAs inserted into pBlueScript
SK(-) at 5' end with EcoRl and 3' end with XhoI site."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Clemson University Genomics Institute
Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
100 Jordan http://www.genome.clemson.edu/orders/index.html
This clone is available through the Clemson University Genomics
Institute
                                                                                                                                                                                                                                                                                                                                                          5 Arggerrecherentarientendengengerrechendengengengenachenger
                                                                                                                                                                                                                                                                                                          1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                         ö
                                                                                                                                                                                                  26.9%; Score 184; DB 1; Length 277; 100.0%; Pred. No. 3.2e-47; ive 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1..279
/organism="Lycopersicon esculentum"
/mol type="mRNA"
/cultivar="TA496"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /db_xref="taxon:4081"
/clone="cTOC19C6"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BI931188.1 GI:16245660
                                                                                                                                                                                                       Query Match 26.9
Best Local Similarity 100.
Matches 184; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 preanthesis
Unpublished (2001)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Seq primer: T3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TGGC 188
                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 12
BI931188
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE
                                                                                                                                                     ORIGIN
                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Lycoperation esculentum (Solanum lycoperaticum)
Lycoperation esculentum
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons; Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons; lasserids; lamiids; Solanales; Solanaceae; Solanum; Lycoperation.

1. (bases 1 to 27).

1. (bases 1 to 27).

1. Ascenzo,M., He,X., Lyman,J., Matern,A.L., Vision,T., Holt,I.E., Liang,F., Upton,J., Romining,C.M., Craven,M.B., Fujii,C.Y., Bowman,C.L., Nierman,W., Fraser,C.M., Venter,J.C., Tanksley,S.D., Glovannoni,J.J. and Martin,G.B.

Generation of ESTs from Pseudomonas resistant tomato
                                                              /mol_type="mRNA"
/cul_tvar="RL11-12 (358::Pto in Rio Grande x Money Maker)"
/db xref="taxon:4081"
/clone="cleR8L7"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /organism="Lycopersicon esculentum"
/mol_type="mRNA"
/cultivar="R11-12 (355::Pto in Rio Grande x Money Maker)"
/db_xxef="taxon::4081"
/clone="clbaf"
/tissue_type="leaf"
/dev_stage="4-week old"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       83 AGCATGCTTGCACCTTTCACTGCTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                 /clone libe tomato resistant, Cornell"
/note="Vector: pBlueScript SK(-); Site_1: EcoR1; Site_2:
Xho1: cLER - Tomato Pseudomonas Resistant EST Library.
Directionally cloned cDNAs inserted into pBlueScript
SK(-) at 5' end with EcoRI and 3' end with XhoI site."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AI773502 277 bp mRNA linear EST 18-MAY-20
EST254602 tomato resistant, Cornell Lycopersicon esculentum cDNA
clone cLER7Al0, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 23 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACCAGCAGCAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .;
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             University Genomics Institute
Contact: CUGI
Clemson University
Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
Email: http://www.genome.clemson.edu/orders/index.html
                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 267;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                 organism="Lycopersicon esculentum"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .
                                                                                                                                                                                                                                                                                                                                                                                                                              26.9%; Score 184; DB 1; L
100.0%; Pred. No. 3.2e-47;
ive 0; Mismatches 0;
                                                                                                                                                                       /tissue_type="leaf"
/dev_stage="4-week old"
/lab_host="SOLR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             prime sequence.
Location/Qualifiers
     Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AI773502.1 GI:5271543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity
Matches 184; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181 TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TGGC 206
                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
                            source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AI773502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             KEYWORDS
  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VERSION
                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
```

g ઠે В ઠે 셤 ò 셤

ઠે 셤 à g ઠે 셤 ઠે 셤

```
/tissue_type="leaf"
/dev_stage="4-6 week old plants"
/lab.host="XL1-Blue MRF""
/clone_lib="tomato mixed elicitor, BTI"
/note="Vector: pBlueScript SK(-); Site_1: EcoRl; Site_2:
Xhol; cLET - Inoculated with a variety of disease response
elicitors - Plants exposed to 2,6 dichloroisonicotinic
acid, BTH, jasmonic acid, ethylene, fenthion, EIX,
okadaic acid, or systemin prior to tissue harvest. EcoRl
site was destroyed during cloning."
                                                                                                                                                                                                                                                                                                                         AW094091 283 19-MAY-2001 EST287271 tomato mixed elicitor, BTI Lycopersicon esculentum cDNA clone cLET27A10, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lycopersicon esculentum (Solanum lycopersicum)
Lycopersicon esculentum
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons;
asterids; lamids; Solanales; Solanaceae; Solanum; Lycopersicon.
1 (bases 1 to 283)
P.Ascenzo,M., He,X., Lyman,J., Holt,I.E., Liang,F., Upton,J.,
Ronning,C.M., Craven,M.B., Fujii,C.Y., Bowman,C.L., Nierman,W.,
Fraser,C.M., Venter,J.C., Martin,G.B., Tanksley,S.D. and
Giovannoni,J. SSTS from tomato leaf tissue
                         AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                               61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               72 AGCATGGITGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCTGTTACAAGAAG 131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       12 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT 71
                                                 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Contact: CUGI
Clemson University
Clemson University
100 Uordan Hall, Clemson, SC 29634, USA
Bmail: http://www.genome.clemson.edu/orders/index.html
5 prime sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 283;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /organism="Lycopersicon esculentum"
/mol type="mRNA"
/culfivar="Rio Grande PtoR"
/db xref="taxon:4081"
/clone="CLET27A10"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        26.9%; Score 184; DB 7; I
100.0%; Pred. No. 3.2e-47;
tive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                  AW094091.1 GI:6059686
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match 26.9°
Best Local Similarity 100.
Matches 184; Conservative
                                                                                                                                                                                     TGGC 184
                                                                                                                                                                                                                           TGGC 190
                                                                                                                                                                                                                                                                                                                                                                                             AW094091
                                                                                                                                          127
                         61
                                                             67
                                                                                                      121
                                                                                                                                                                                     181
                                                                                                                                                                                                                           187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    source
                                                                                                                                                                                                                                                                                                                                                DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                       RESULT 14
AW094091
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORIGIN
                                                     유
                                                                                                    ò
                                                                                                                                  셤
                                                                                                                                                                                ò
                         ઠે
                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    linear EST 18-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Lycopersicon esculentum (Solanum lycopersicum)
Lycopersicon esculentum
Eukaryota, Viridiplantae, Streptophyta; Embryophyta; Tracheophyta;
Bukaryota; Viridiplantae, Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; eudicotyledons; core eudicotyledons;
asterids; lamiids; Solanales; Solanaceae; Solanum; Lycopersicon.
1 (bases I to 279)
Van der Hoeven, R.S., Bezzeredes, J.L., Matern, A.L., Holt, I.E.,
Liang, F., Hansen, T., Craven, M.B., Bowman, C.L., Ronning, C.M.,
Mierman, W., Fraser, C.M., Martin, G.B., Giovannoni, J.J. and
Tanksley, S.D.
Generation of ESTs from tomato flower tissue, 0-3 mm buds
                                                                                                                                                                                                                             AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAGAAG 126
                                                                                                                                                                                                                                                                                                            CAAAACCTIGACATCACTICCATIGCTAGCAAIGGIGGAAGAGTIAGCIGCAIGCAGGIG 186
                                                                                                                                                                                                      61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAGAAG 120
                                                                                                                                                                                                                                                                                     99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99
                                                                                                                                              1 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7 AIGGCTICCTCTGICATTTCTTCAGCAGCIGITGCCACACGCAGCAGGTAACACAAGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 ATGGCTTCCTCTCTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT
                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BE462486
279 bp mRNA linear EST 18-
EST324752 tomato flower buds 0-3 mm, Cornell University
Lycopersicon esculentum cDNA clone cTOA1301, mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ö
                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Contact: CUGI
Clemson University Genomics Institute
Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
Email: http://www.genome.clemson.edu/orders/index.html
5 prime sequence.
                                          Length 279;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 279;
                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                      26.9%; Score 184; DB 2; I 100.0%; Pred. No. 3.2e-47; ive 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match 26.9%; Score 184; DB 7; L
Best Local Similarity 100.0%; Pred. No. 3.2e-47;
Matches 184; Conservative 0; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
1. .279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BE462486.1 GI:9508255
                                                                                 Conservative
                                  Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                   TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                              TGGC 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BE462486
                                                                          Matches 184;
                                                                                                                                                                                                                                          67
                                                                                                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                           127
                                                                                                                                                                                                                                                                                                                                                                   181
                                                                                                                                                                                                                                                                                                                                                                                                            187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BE462486
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORIGIN
```

ö

셤 ð

```
BF051382 286 bp mRNA linear EST 18-MAY-2001 EST446557 comato developing/immature green fruit Lycopersicon esculentum cDNA clone cLEM22P19 5' sequence, mRNA sequence. BF051382.1 GI:10805278
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /clone_lib="tomato developing/immature green fruit"
/note="Vector: pBluescriptSKmcUadapt; Site_1: BcoR1;
Site_2: Xhol; Fruit were tagged at 5 dpa (0.5 cm) and
harvested at 7 day intervals through 35 dpa. Equal masses
of tissue from each stage were combined (including seeds
and locules) prior to mRNA isolation."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                             Lycopersion esculentum (Cornam Troping Control of State Strategies) Strategies (Strategies) Strategies (Strategies) Strategies (Strategies) Strategies (Strategies) Strategies (Strategies) Spermatophyta; Magnoliophyta; endicotyledons; corrections; corrections (Dases 1 to 286) Solanacea; Solanacea; Solanum; Lycopersicon. Alcala,J., Vrebalov,J., White,R., van der Hoeven,R.S., Holt,I.E., Liang,F., Hansen,T.S., Craven,M.B., Bowman,C.L., Ronning,C.M., Nierman,W., Fraser,C.M., Martin,G.B., Giovannoni,J.J. and Ganeration of ESTs from tomato fruit tissue, immature green (Mpublished (2000)
61 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAGAAG 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           70 AGCATGGTTGCACCTTTCACTGGTCTCAAATCTTCAGCCACTTTCCCTGTTACAAAAGAAG 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10 ATGGCTTCCTCTGTCATTTCTTCAGCAGCTGTTGCCACACGCAGCAATGTTACACAAGCT 69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /organism="Lycopersicon esculentum"
/mol type="mRNA"
/culfiva="TA496"
/db xref="taxon:4081"
/clone="CLEM22P19"
/tissue_type="fruit"
/dev stage="immature green (5-35 days post-anthesis)"
/lab_host="SOLR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0; Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Clemson University Genomics Institute
Clemson University
100 Jordan Hall, Clemson, SC 29634, USA
Email: http://www.genome.clemson.edu/orders/index.html.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match 26.9%; Score 184; DB 7; Length 286; Best Local Similarity 100.0%; Pred. No. 3.3e-47; Matches 184; Conservative 0; Mismatches 0; Indels
                                                                                                                                                                                                                                                                                                                                                                              Lycopersicon esculentum (Solanum lycopersicum)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Search completed: May 30, 2006, 03:27:40 Job time : 4488 secs
                                               181 TGGC 184
                                                                                           192 rééc 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     181 TGGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  190 régč 193
                                                                                                                                                                                                                                                                                                                                                      EST
                                                                                                                                                                                                                                                                                             ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                             DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE
JOURNAL
COMMENT
                                                                                                                                                                         RESULT 15
BF051382
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORIGIN
윱
                                               ઠે
                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
```

Sequence

Scoring table:

Minimum DB Maximum DB

Perfect score:

Sequence:

OM protein

Run on:

```
AR42873 Sequence
AR382294 Sequence
AX382294 Sequence
AX382294 Sequence
AX382294 Sequence
AR144788 Sequence
M95268 Escherichia
M93136 Escherichia
M93136 Escherichia
M93136 Escherichia
X57434 E.coli ubiC
X6619 E.coli gene
Continuation (43 o
Continuation (43 o
Continuation (52 o
Continuation (52 o
Continuation (52 o
Continuation (44 o
Continuation (44 o
Continuation (44 o
Continuation (44 o
Continuation (44 o
Continuation (43 o
Continuation (43 o
Continuation (44 o
Continuation (43 o
Continuation (44 o
Continuation (43 o
Continuation (43 o
Continuation (43 o
Continuation (43 o
Continuation (43 o
Continuation (43 o
Continuation (43 o
Continuation (43 o
Continuation (43 o
Continuation (43 o
Continuation (43 o
Continuation (43 o
Continuation (44 o
AL627282 Salmonell
AR384505 Sequence
                                                                                                                                                                                                                                                                                                                                                                                     AJ414142 Yersinia
AE017128 Yersinia
Continuation (7 of
BX571873 Photorhab
Continuation (13 o
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PAT 18-DEC-2003
                                                                                                                                                                                                                                                                                                                                                                 AE013658 Yersinia
Continuation (5 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Unclassified.

1 (bases 1 to 684)

2 (bases 1 to 684)

3 (bases 1 to 684)

5 (bases 1 to 684)

5 (bases 1 to 684)

6 (bases 1 to 684)

7 (bases 1 to 684)

8 (bases 1 to 684)

8 (bases 1 to 684)

8 (bases 1 to 684)

8 (bases 1 to 684)

9 (bases 1 to 684)

9 (bases 1 to 684)

9 (bases 1 to 684)

9 (bases 1 to 684)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Patent: US 6642036-A 16 04-NOV-2003;
E. I. Du Pont de Nemours and Company; Wilmington;
WOX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length:
Matches:
Conservative:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AR428736 684 bp | Sequence 16 from patent US 6642036.
AR428736 AR428736.1 GI:40188466
                                                                                                                                            U00096 42
AP009048 42
                                                                                                                                                                                      BA00000750
BA00000751
DQ08727443
AE01407334
CP00003641
CP000038442
CP000038442
                                                                                                                                                                                                                                                                                         AE008898
CP000026 41
CP000026 42
AE014613 42
AE017220 43
                                                                                                                                                                                                                                                                                                                                                                                                                                                              ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                        BX950851_06
BX571873
                                                                                                                                                                           AE005174_51
BA000007_50
                                                                                                                                                                                                                                                                                                                                                                           BX936398 04
                                                                                 E11274
ECOUBICA
ECOUBIPLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /organism="unknown"
/mol_type="genomic DNA"
         A47932
AR428733
AR455409
AX329364
AX382254
AR144788
ECOUBIA
                                                                                                               ECUBIAC
                                                                                                                                   AR144789
                                                                                                                                                                  ECOUW89
                                                                                                                                                                                                                                                                                                                                                         AR384505
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1.23e-83
887.00
100.0%
                                                                                           115
115
115
2
                                                                                                                                                                                                                                                                                                                                                                  122
                                                                                                                                                                                                                                        110000
110000
110000
                                                                                                                                                                                                                                                                                           23880
110000
110000
110000
                                                                                                                                                                                                                                                                                  1918
                                                                                                                                                                                                                                                                                                                         110000
                                                                                                                                                                                                                                                                                                                                                         645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       . .684
                                                                                                                                                                                                 110000
                                                                                                                                                                                                                      110000
                                                                                                                                                                                                                              110000
                                                                                                                                                                                                                                                                       110000
                                                                                                                                                                                                                                                                                                                                                                           110000
         881.3
881.3
881.3
881.3
861.3
861.3
861.3
861.3
861.3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Unknown.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
Pred. No.:
DEFINITION
ACCESSION
VERSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 1
AR428736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
  ORIGIN
                                                                                                                                                                                                                                                                                                                                Command line parameters:
-MODEL=frame+ p2n.model -DEV=xlh
-Q=Abss/ABSWBEs spool/0810718311/runat 26052006_164916_13439/app_query.fasta_1
-DB=GenEmbl -QFMT=fastap -SUFFIX=rge -MINMATCH=0.1 -LOOFCL=0 -LOOFEXT=0
-UNITS=bits -START=1 -END=-1 -MATRIX=blosum62 -TRANS=human40.cdi -LIST=45
-DOCALIGN=200 -THR_SCORE=pct -THR_MAX=100 -THR_MIN=0 -ALIGN=1S -MODE=LOCAL
-UOTFWM=pct -NORM=ext -HEAPSIZE=500 -MINIENE0 -MAXENE=20000000000 -HOST=abss03h
-USER=USI0718311_@GGN 1 1 5767 @runat 26052006_164916_13439 -NCPU=6 -ICPU=3
-NO WMAP -NEG SCORES=0 -WAIT -DSPBLOCK=100 -LONGLOG -DEV TIMEOUT=120
-WARN TIMEOUT=30 -THREADS=1 -XGAPOP=10 -XGAPEXT=0,5 -FGAPOP=6 -FGAPEXT=7
                                                                     ; Search time 5152.27 Seconds
  (without alignments)
3164.934 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AR428736 Sequence
AR455412 Sequence
AX329368 Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                  1 MQVWHMSHPALTQLRALRYC......RLSGKPLLLTELFLPASPLY 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Description
          GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd
                                                  - nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                      Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                   6366136 seqs, 31973710525 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SUMMARIES
                                                                                                                                                                                                                                                                                          Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AR428736
AR455412
AX329368
                                                                                                                                                     BLOSUM62
Xgapop 10.0, Xgapext
Ygapop 10.0, Ygapext
Fgapop 6.0, Fgapext
Delop 6.0, Delext
                                                                      May 30, 2006, 01:30:02
                                                                                                                                                                                                                                                             seq length: 0
seq length: 200000000
                                                                                                               US-10-718-311-16
887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      99b_env:*
99b_par::*
99b_pr::*
99b_pr::*
99b_pr::*
99b_ov::*
99b_ov::*
99b_ov::*
99b_ov::*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query
Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    684
684
684
                                                                                                                                                                                                                                                                                                                                                                                                                                                              GenEmbl: *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9...
110...
112...
15...
```

Database

Score

Result No.

us-10-718-311-16.rge

6 6 6 6

ò g ò 셤 중 음

8 B

ď Š g ద

ò

```
US-10-718-311-16 (1-170) x AX329368 (1-684)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AX329368.1 GI:18102367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1.23e-83
887.00
100.0%
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Alignment S
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AX329368
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
 8 6 8 6
                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         엄
                                                                                                                                         ò
                                                                                                                                                                      원 상
                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20-FEB-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeu 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAsp 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThr 160
                                                                                                                                                                                                                                                                                                                                                                    411
                                                                                                                                                                                                                                                                                                                                                                                                          LeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValVal 100
                                                                                                                                                                                                                                                                                                                                                                                                                                          471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            591
                                                                                                                                             231
                                                                                                                                                                                                                  291
                                                                                                                                                                                                                                                                                             351
                                                                                                                                                                                                                                                                                                                                 80
                                                                                                                                                                                  40
                                                                                                                                                                                                                                                        9
                                                                                                         CCTGTGTCAACGTTAAGCGGGCCGGAGCTGGCGTTACAAAAATTGGGTAAAAACGCCGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGACGCTATCTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGAT
                                                                                                                                                                                                                                                                                                                                 ValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrp
                                                                                                                                                                                                                                                                                                                                                                                                                               TTACGTGAAATTTTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    plants
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                M Unknown.

M Unknown.
Unclassified.

E 1 (bases 1 to 684)

S Meyer, K., Vittanen, P.V. and Van Dyk, D.E.
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in gree
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green
High level production of p-hydroxybenzoic acid in green p-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        684
170
0
0
 000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DNA
 Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GluLeuPheLeuProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AR455412 684 bp
Sequence 7 from patent US 6683231.
AR455412
AR455412.1 GI:42689960
                                  Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps:
                                                                        US-10-718-311-16 (1-170) x AR428736 (1-684)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-10-718-311-16 (1-170) x AR455412 (1-684)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.23e-83
887.00
100.0%
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Unknown.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Alignment Scores:
Pred. No.:
                                                                                                                                             172
                                                                                                                                                                                  21
                                                                                                                                                                                                                    232
                                                                                                                                                                                                                                                        41
                                                                                                                                                                                                                                                                                             292
                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                     352
                                                                                                                                                                                                                                                                                                                                                                                                          81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           652
                                                                                                                                                                                                                                                                                                                                                                                                                                          412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       161
Best Local Si
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Bource
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AR455412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FEATURES
```

```
08-JAN-2002
                                                                                                                                            100
                                                                                                                                                            471
                                                                                                                                                                              120
                                                                                                                                                                                               531
                                                                                                                                                                                                                 140
               231
                                                 291
                                                                   411
                                                                                                                                                                                                                                   591
                                                                                                                                                                                                                                                   40
                                                                                                       80
                                           MetGlnValTrpHisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCys
        21 LysGlulleProAlaLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMet
                                                                                                                                                                                                                                                                                                                                                                                                                                   green plants
                                                                                                                                                                                                                                                                                                                                            PAT
                                                                                                                                                                                                                                                                                                                                                                                                                                   acid in
                                                                                                                                                                                                                                                                                                                                            linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             684
170
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                        Meyer, K., van Dyk, D. E. and Viitanen, P.V. High level production of p-hydroxybenzoic Patent: WO 0194607-A 7 13-DEC-2001; B.I. Dupont De Nemours (US)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1. .684
/organisme.mynthetic construct.../mol_type="unassigned DNA"
/db_xref="texon:32630"
/noTe="synthetic CPL"
                                                                                                                                                                                                                                                                                                                                            DNA
                                                                                                                                                                                                                                                                                                                                                                                       synthetic construct
synthetic construct
other sequences; artificial sequences.
                                                                                                                                                                                                                                                                                                         681
                                                                                                                                                                                                                                                                                       161 GlubeuPhebeuProAlaSerProbeuTyr 170
                                                                                                                                                                                                                                                                                                 GAACTGTTTTTACCGGCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                                                        AX329368 684 bp
Sequence 7 from Patent WO0194607.
AX329368
```

Db 232 AAAGAGATCCCTGCCTGGAACTGCTCGACTGGTTGCTGGAGGATTCCATG 291 292 AAAGAGATCCCTGCCTGGAACTGCTCGACTGCTGGAGGATTCCATG 292 ACAAAACGTTTTGAACAGCAGGAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTT 351 292 ACAAAACGTTTTGAACAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTT 351 Qy 61 ValGluGluAsnGluIleProGluGluCeuProLeuLeuProLysGluSerArgTyrTrp 80	Qy 121 GlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPhelleGlulleGlyArgAsp 140 Db 532 GGACGCTATCTGTACATCATCGACATTAACCGGGACTTTATTGAGATAGGCCGTGAT 591 Qy 141 AlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuArgLeuSerGlyLy8ProLeuLeuThr 160 Db 592 GCGGGCTGTGGGGCGACGTTCCCGCCTGGGATTAAGGGGTAAACCGCTGTTGCTAACA 651 Qy 161 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	LOCUS LOCUS LOCUS A47932 LOCUS Sequence 1 from Patent W09600788. ACCESSION A47932 VERSION A47932 A47932 CORRES SOURCE COMMENT	Alignment Scores: 2.59e-80
Qy 21 LysGlulleProAlaLeuAspProGInLeuLeuAspTrpLeuLeuGluAspSerMet 40 Db 232 AAAGAGATCCCTGGATCCGCAACTGCTCGACTGGTGGAGGATTCCATG 291 Qy 41 ThrLysArgPheGluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPhe 60 Db 292 ACAAAACGTTTGAACAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTT 351 Qy 61 ValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLeuLeuProLeuArgTyrTrp 80 Db 352 GTCGAGCAAATGAAACGCTGCCGCTGCTGCCGCAAAGAGTTTCTGTTACTGG 411 Qy 81 LeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValVal 100 Db 412 TTACGTGAAATTTGTTGTGCGATGGTGACGTGCGTGCTGTTCTTT 71 Qy 101 ProValSerThrLeuSerGlyProGluLeuAlaLeuGlytygFurproCredTCGTCGTCGTCGTCGTTCTTT 71	Db 472 CTGTGTCACGTTACGGGGCGCGTTACAAAATTGGGTAAAACGCCGTTA 531	58 TION A TION A NISM SONISM SONS SONS SONS SONS SONS SONS SONS SO	Alignment Scores: Alignment Scores: Pred. No.: B87.00 Matches: 170 Score: 100.0\$ Mismatches: 0 Best Local Similarity: 100.0\$ Mismatches: 0 Best Local Similarity: 100.0\$ Mismatches: 0 Best Local Similarity: 100.0\$ Mismatches: 0 Best Local Similarity: 100.0\$ Mismatches: 0 Best Local Similarity: 100.0\$ Mismatches: 0 Gaps: 0 US-10-718-311-16 (1-170) x AX382258 (1-684) Qy 1 MetGlnValTrpHisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCys 20

240 105 300 125

82

```
61 CTGGATCCGCAACTGCTCGACTGGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105
                                                                        ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                   26 LeuaspProGlnLeuLeuAspTrpLeuLeuCluaspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181 Arcccceaagaacreccecrecreccaaagacrercerracregraceraaarrrre
IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                              green
                                                                                                                                                                                                                                                                                                                                                               띰
                                                                                                                                                                                                                                                                                                                         Tobases 1 to 495)
Meyer, K., Viitanen, P.V. and Van Dyk, D.E.
High level production of p-hydroxybenzoic acid in
Patent: US 6683231-A 3 27-JAN-2004;
E. I. du Pont de Nemours and Company; Wilmington,
Location/Qualifiers
                                                                                                                                                                                                                                                  linear
                                                                                                                                                                                                                                                                                                                                                                                                                                         495
0
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                         Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                         Sequence 3 from patent US 6683231.
AR455409
AR455409.1 GI:42689957
                                                                                                                                                                                                                                                                                                                                                                                  1. .495
/organism="unknown"
/mol_type="genomic DNA"
                                                                                                                                                                                                                                                  495 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-718-311-16 (1-170) x AR455409
                                                                                                                                                                                                           495
                                                                                                                                                                                         166 AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                         2.59e-80
854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                     GCGTCACCGTTGTAC
                                                                                                                                                                                                                                                                                                        Unknown.
Unclassified.
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                  AR455409
                                                                                                                                                                                                                                                                                           .
Unknown.
                                                                                                                                                                                                                                                                                                                                                                                                                                 Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                   181
                                                                                                                                                    146
                                                                                                                                                                       421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  86
                                                                                                                                                                                                                                                         DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                                                                                                                                                                                         ORGANISM
                                                                                                                                                                                                                                                                                                                           REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                             RESULT 7
AR455409
LOCUS
                                                                                                                                                                                                                                                                                                                                                                          FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                   8 8
                                                                                      g
                                                                                                              8 6
                                                                                                                                                                  g
                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ∂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ð
8 6
                             ઠે
                                                                                                                                              ò
                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                       PAT 18-DEC-2003
                                                                                                              SerGlyProGluLeualaLeuGlnLyBLeuGlyLyBThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                                   ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  180
                                                                                            241 Trangreceargergaaccerecerrecegregrecerecrecrecrererages 300
                                                                                                                                                                                         ArgargSerArgleuArgleuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu 45
                                      82
                                                                                                                                                                                                                                                                                                                                                                                    malate conjugates
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                65
LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                    421 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                        l (bases 1 to 495)
Flint,D., Meyer,K. and Viltanen,P.
Sinapoylglucose:malate sinapoyltransferase form m
from benozic acid glucosides
Patent: US 6642036-A 12 04-NOV-2003;
E. I. Du Pont de Nemours and Company; Wilmington;
WOX;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  495
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                     AR428733 495 bp I
Sequence 12 from patent US 6642036.
AR428733.1 GI:40188463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                               Location/Qualifiers
1. .495
/organism="unknown"
/mol_type="genomic DNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-718-311-16 (1-170) x AR428733 (1-495)
                                                                                                                                                                                                                              AlaSerProLeuTyr 170
                                                                                                                                                                                                                                           GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.59e-80
854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                                                               Unknown.
Unclassified.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                 .
Unknown.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                       361
                                                                                                                                 301
                                                                                                                                                                                                                                166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 46
                  121
                                                                          86
                                                                                                                106
                                                                                                                                                    126
                                                                                                                                                                                          146
46
                                                                                                                                                                                                                                                  481
                                                                                                                                                                                                                                                                            AR428733
LOCUS
DEFINITION
ACCESSION
VERSION
VERSION
SOUNCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred. No.:
Score:
                                                                                                                                                                                                                                                                                                                                                                REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                      JOURNAL
                                                                                                                                                                                                                                                                    RESULT 6
                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                             ઠે
                                                  8 & 8
                                                                                                         8 6 6 6
                                                                                                                                                                                        ઠે
                                                                                                                                                                                                      g
                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ŝ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
            셤
```

20-FEB-2004

PAT

plants

240

82

65

9 42

25

145 360

420

165

	361	Qy 146 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro 165	Qy 166 AlaSerProLeuTyr 170 Db 481 GCGTCACCGTTGTAC 495	AX382254	DEFINITION Sequence 12 from Patent W00204653. ACCESION AX382254 VERSION AX382254.1 GI:19577034 KEYWORDS Escherichia coli ORGANISM Escherichia coli Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;	Enterobacteriaceae; Eschefichia. CE Int,D., Meyer,K. and Viltanen,P.V.	Sinapolyg from benc Patent: W E.I. DUPC	<pre>source 1495 /organism="Escherichia coli" /mol_type="unassigned DNA" /db_xref="taxon:562" ORIGIN</pre>	nent Scores: 2.59e-80 Length: No.:	Score: Score: Percent Similarity: 100.0\$ Conservative: 0 Best Local Similarity: 100.0\$ Mismatches: 0 Query Match: 2 Indels: 0 DB: 2 Gaps: 0 US-10-718-311-16 (1-170) x AX382254 (1-495)	Qy 6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla 25	1 AIGICACACCCCGGGTTAACGCACTGCGGTGCGCTGCGCT	46 GlnGlnGlyLysThrValSerValThrMetlleArgGluGlyPheValGluGlnAsnGlu 	Oy 66	LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu	241 106 301
	301 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTTATTTTTTT 36	<pre>QY 126 IntSetSetThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 145 </pre>	Oy 146 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro 165	Qy 166 AlaSerProLeuTyr 170 Db 481 GCGTCACCGTTGTAC 495	RESULT 8 AX329364 AX329364 LOCUS LOCUS DEFINITION Sequence 3 from Patent W00194607, ACCESSION AX329364 VENESION AX329364.1 GI:18102364	unidentified SM unidentified	REFERENCE 1 AUTHORS Meyer, K., van Dyk, D.E. and Viitanen, P.V. TITLE High level production of p-hydroxybenzoic acid in green plants JOURNAL Patent: WO 0194607-A 3 13-DEC-2001;	FEATURES Location/Qualifiers Location/Qualifiers Location/Qualifiers Fource 1. 495 / Organism="unidentified" / mol_type="unassigned" / moltype="unassigned" / moltype="unass	/note="taxon:32044" /note="Description of Unknown Organism:E. coli"	Alignment Scores: 2.59e-80 Length: 495 Pred. No.: 854.00 Matches: 165 Score: 165 Percent Similarity: 100.0% Mismatches: 0 Best Local Similarity: 100.0% Mismatches: 0 Query Match: 96.3% Indels: 0	: -10-718-311-16 (1-170) x AX329364 (1-495)	1 0	26 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu 	46 GinGinGiyLysThrValSerValThrMerileArgGluGiyPheValGluGin 	<pre>Qy 66 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu 85 </pre>	Oy 86 LeucysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105

8 유 ð

```
Codon start=3

/transl_table=11
/protein_id="AAA1026.1"
/protein_id="AAA1026.1"
/b xreef=1011347887"
/translation="RFSEVNFDTQQMIDFINRFNTNKWLIDKNNNFFIQLIDQALRST
DOMIKANWHLYKKWIRSDDVSPIFIETEDNLRTFNTNELTRNDNIFILFSSVDDGPV
MVVSSQRLHDMLNPTKDTNNNSTYIYKSRHEWLPVNLTQETLFSSKSHGKYALFPIFT
ASWRAHRIMNKGV"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
/transl_table=11
/producT="chorismate lyase"
/producT="chorismate lyase"
/producT="chorismate lyase"
/producT="de"AA17027.1"
/db_xref="di:347888"
/translation="MSHPALTOLRALRYCKEIPALDPOLLDWILLEDSWTKRFEQQGK
TVSYTMIREGFVEQNEIPEELPLAPKESRYMLREILLCADGEPWLAGRTVVPVSTLSG
PELALOKLGKTPLGRYLFTSSTLTRDFIEIGRDAGLWGRRSRLNLSGKPLLLTELFLP
ASPLY"
                                                                                                                                                          BCT 28-MAR-1994
Escherichia coli

Escherichia coli

Escherichia coli

Bacteria, Proteobacteria, Gammaproteobacteria, Enterobacteriales,

Enterobacteriaceae; Escherichia.

1 (bases 1 to 1498)

14 (bases 1 to 1498)

Mutants of Escherichia coli affected in respiration: the cloning

and nucleotide sequence of ubiA, encoding the membrane-bound

b-hydroxybenzoate:octaprenyltransferase

1 Gen. Microbiol. 139 (Pt 8), 1795-1805 (1993)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       '1. 524 / Octe="ORF; the sequence before nucleotide number 110 might not be genuine. Three Clai sites, which is the enzyme used for cloning, were identified in this region, so it could be a cloning artifact"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     in entry
                                                                                                                                                                                                                                                4-hydroxybenzoate octaprenyl transferase; aerobic respiratory deficiency; chorismate lyase; membrane-bound protein; prenyltransferase; transferase; ubid gene; ubic gene; ubiquinone biosynthesis.
                                                                                                                                                                         Escherichia coli 4-hydroxybenzoate octaprenyl transferase (ubiA)
gene, 5'end and chorismate lyase (ubiC) gene, complete cds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /codon_start=1
/transI_table=11
/product="4-hydroxybenzoate-octaprenyl_transferase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       found
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     pe
                                                                                                                                                          linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       į8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       this ORF
                                                                                                                                                            DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   coli"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /mol_type="unassigned DNA" /strain="K-12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       οĘ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1. .1498
/organism="Escherichia
                                                                                                                                                            1498 bp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       part
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /db_xref="taxon:562"
/map="91.8 min"
/tissue_lib="cosmid"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="The last
K00127.; ORF"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /gene="ubic"
747. .1244
/gene="ubic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="ubiA"
|1257.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1257. .>1498
/gene="ubiA"
                                                  166 AlaSerProLeuTyr 170
                                                                                         812
                                                                                                                                                                                                                               M96268.1 GI:347886
                                                                        GCGTCACCGTTGTAC
                                                                                                                                                            ECOUBIA
                     741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    source
                                                                                                                                                                           DEFINITION
                                                                                                                                                                                                                                                                                                                                     ORGANISM
                                                                                                                                                                                                           ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
PUBMED
                                                                                                                           RESULT 11
ECOUBIA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CDS
                                                                                                                                                                                                                                                                                                                     SOURCE
                                                                                   g
                                               8
                                                                                                                                                                                                                                                 PAT 08-AUG-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      680
                                                                     ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLhuGuLeuPheLeuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ThrSerSerThrLeuThrArgAspPhelleGlulleGlyArgAspAlaGlyLeuTrpGly 145
                                                                                                         480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  381 cresarcescaacresresereseretresreseassarresarsacarareserentes 440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            146 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LeuAspProGlnLeuLeuAspTrpLeuLeuCluAspSerMetThrLysArgPheGlu 45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22
                                                                                                                                                                                                                                                                                                                                                                                                                                           Development of genetically engineered bacteria for production of selected aromatic compounds
Patent: US 6210937-A 24 03-APR-2001;
Location/Qualifiers
                                                                                          421 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GlnGlnGlvLysThrValSerValThrMetileArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IleProGluGluLeuProLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TTATGTGCCGATGGTGAACCGTGGCTTGCCGTCGTACCGTCCTTCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                     1 (bases 1 to 854)
Ward,T.E., Watkins,C.S., Bulmer,D.K., Johnson,B.F. and
Amaratunga,M.
                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      854
000
000
000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                   DNA
                                                                                                                                                                                                                                                AR144788 854 bp 1
Sequence 24 from patent US 6210937.
AR144788 1 GI:15106655
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1. .854 // /organism="unknown" /wol_type="unassigned DNA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (1-854)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-718-311-16 (1-170) x AR144788
                                                                                                                                          166 AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4.67e-80
854.00
100.0%
100.0%
96.3%
                                                                                                                                                                           481 GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                        Unclassified.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                     Unknown.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Alignment Scores:
                                                                      146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       46
                                                                                                                                                                                                                                                            DEFINITION
ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Мо.:
                                                                                                                                                                                                                                                                                                                                                      ORGANISM
                                                                                                                                                                                                             RESULT 10
AR144788
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score:
```

දි දි

ð

ò g ò g 8 6 8

8 8

ò

S

```
ECOUBICA 2000 bp DNA linear BCT 26-APR-1993 Escherichia coli chorismate lyase (ubic), 4-hydroxybenzoate octaprenyl transferase (ubiA) genes, complete cds, and sn-glycerol-3-phosphate acyltransferase (plaB) genes, 3' end. M93136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           560 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               66 IleProGluGluLeuProLeuLeuProLysGluSexArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         680 AGGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           740 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGGCTGTGGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly
C12N15/09, A61K31/12, A61K31/12, C07H21/04, C12N1/21, C12P7/66,
                                                                                                                                                                  coli'
                                                                                                                                                                                                                                                                                                                                                                                                                                       2000
165
0
0
                                                                                                                                                           /organism='Escherichia | 190. 877 | 190. 877 | 190. 1762 | 190. 1762 | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 190. | 1
                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                      1. .2000
/organism="Escherichia coli"
/mol_type="genomic DNA"
/db_xref="taxon:562"
                         11/21,
C12R1:01), (C12P7/66,C12R1:01);
Strandedness: Double;
topology: Linear;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-718-311-16 (1-170) x E11274 (1-2000)
                                                                                                                                              1. .2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                     1.17e-79
854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GCGTCACCGTTGTAC 874
                                                                                                                                              source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                       CDS
                                                                                                                                                                                                                              CDS
            Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             960
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match:
DB:
                                                                                                                                                                                                                                                                                           source
                                                                                                                                                                                                                                                                                                                                                                                                                                     Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 13
ECOUBICA
                                                                                                                                                                                                                                                                     FEATURES
                                                                                                                                                                                                                                                                                                                                                                           ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
/protein_id="AAA17028.1"
| Ma_xxef="id1:347889"
| translation="HEMSLTQNKLAPHRLMRTDKPIGALLLLWPTLWALWVATPGVP
| QLWILAVFVAGVWLMRAAGCVVNDYADRKFDGHVKRT"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1047 AGCGGGCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC 1106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PAT 29-SEP-1997
                                                                                                                                                                                                                                                                                                                                                                                                           986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SerGlyProGluLeuAlaLeuGlnLyBLeuGlyLygThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 145
                                                                                                                                                                                                                                                                                                                                                                         806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             926
                                                                                                                                                                                                                                                                                                                                  25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales; Enterobacteriaceae; Escherichia.

[ Lobase 1 to 2000)

Matsuda, H., Kawamuki, M. and Nakagawa, T.

PRODUCTION OF UBIQUINONE-10

Patent: JP 1996107789-A 1 30-APR-1996;

ALPHA- SHOKUHIN KK

OS Escherichia coli

PN JP 1996107789-A/1

PN JP 1996107789-A/1

PN JP 1996107789-A/1

PN JP 1996107789-A/1

PN JP 1996107789-A/1

PN JP 1996107789-A/1

PN JP 1996107789-A/1

PN JP 1994107789-A/1

PN JP 1994107789-A/1

PN JP 1994107789-A/1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                66 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
927 ATCCCCGAAGAACTGCCGCTGCTGCCGAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                     867 CAGCAGGAAAAACGGTAAGCGTGACGATGATCCCCGAAGGGTTTGTCGGGAGAGATGAA
                                                                                                                                                                                                                                                                                                                             MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  46 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Escherichia coli
JP 1996107789-A/1
30-APR-1996
13-OCT-1994 JP 1994273071
MATSUDA HIDEYUKI, KAWAMUKI MAKOTO, NAKAGAWA TSUYOSHI PC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    linear
                                                                                                                                          1498
165
0
0
0
                                                                                                                                        Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA
                                                                                                                                                                                                                                                Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 đq
                                                                                                                                                                                                                                                                                      US-10-718-311-16 (1-170) x ECOUBIA (1-1498)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             E11274
ubiC and ubiA gene.
E11274
E11274.1 GI:22024916
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8.596-80
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        166 AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JP 1996107789-A/1.
Escherichia coli
Escherichia coli
                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    901
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        126
                                                                                                                                                                                                                                                                                                                                9
                                                                                                                                                                                                                          Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                            Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMMENT
                                                                             ORIGIN
                                                                                                                                                                Score:
```

g

ò g ò g ò a õ 유

ઠે

ò

g

ద

ò 엄 ઠે 셤

ठे

439

619 105

85

679 125 739 145 799

559

```
ECOUBIPLS

2000 bp DNA linear BCT 26-APR-1993
Bscherichia coli 4-hydroxybenzoate octaprenyl transferase (ublA)
gene complete cds, chorismate lyase (ubiC) gene complete cds,
sn-glycerol-3-phosphate acyltransferase (plsB) gene, 3' end.
M93413
'experiment="experimental evidence, no additional details
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene.
Becherichia coli W3110
Becherichia coli W3110
Bacteria, Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Becherichia.
1 (Dases 1 to 2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            M93413.1 GI:148106
4-hydroxybenzoate octaprenyl transferase; chorismate lyase; plsB
gene; sn-glycerol-3-phosphate acyltransferase; ubiA gene; ubiC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   500 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    560 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LeuCygAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    146 ArghrgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       26 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          440 criccariccical recreations de la constanta de la cricca de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta del constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta del constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta de la constanta del constanta del constanta de la constanta del constanta del constanta del constanta del constanta de
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           66 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            620 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            126 ThrSerSerThrLeuThrArgAspPhelleGlulleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /codon start=1
/transl_table=11
/product="en-glycerol-3-phosphate acyltransferase"
/protein id="AAA24713.1"
/db_xref="c1:148102"
/translation="MKVYQLLAELITSDVRLTIESATQGEG"
                                                                                                                                                                                                                                                                                                                                                                                                                                 2000
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (1-2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-718-311-16 (1-170) x ECOUBICA
                                                                      /citation=[1]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCGTCACCGTTGTAC 874
                                                                                                                                                                                                                                                                                                                                                                                                                             1.17e-79
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    166 AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                       Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ECOUBIPLS
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                ..
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACCESSION
VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 14
                                                                                                                                                                                                                                                                                                                                ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOURCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon gtart=1
/trans[ table=11
/trans[ table=11
/trans[ table=11
/product="4-hydroxybenzoate-octaprenyl transferase"
/product="4-hydroxybenzoate-octaprenyl transferase"
/bb_xref="d1:148101"
/db_xref="d1:148101"
/db_xref="d1:148101"
/db_xref="d1:148101"
/db_xref="d1:148101"
/translation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsLation="memsL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /translation="mshPaltQlralrycketPaldpQlldwllledSmtkRFEQQGK
IVSVTMIREGFVEQNEIPEELPLLPKESRYWLREIILCADGEPWLAGRTVVPVSTLSG
PELALQKLGKTPLGRYLFTSSTLTRDFIEIGRDAGLWGRRSRLRLSGKPLLLTELFLP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ŏ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      experiment="experimental evidence, no additional details
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    experiment="experimental evidence, no additional details
                                                                                                                                             Escherichia coli W3110
Secherichia coli W3110
Bacteria, Proteobacteria, Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2 (bases 1 to 2000)
Nichols, B.P. and Green, J.M.
Cloning and Sequencing of Escherichia coli ubiC and purification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Original source text: Bscherichia coli (sub_strain W3110, strain K-12) (library: Kohare lambda-1F8) DNA. Location/Qualifiers
                                     4-hydroxybenzoate octaprenyl transferase; chorismate lyase; plsB
gene; sn-glycerol-3-phosphate acyltransferase; ubiA gene; ubiC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               --> p-hydroxybenzoate +
                                                                                                                                                                                                                                                                                                                                                                 Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /function="enzymatic - 3-octaprenyl-4-hydroxybenzoate
synthesis"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="plsB"
/EC_number="2.3.1.15"
/function="lysophosphatidic acid synthesis"
                                                                                                                                                                                                                                                                                                                                                                 oŧ
                                                                                                                                                                                                                                                                                           1 (bases 1 to 2000)
Lightner,V.A., Bell,R.M. and Modrich,P.
The DNA sequences encoding plsB and dgk loci
1. Biol. Chem. 258 (18), 10856-10861 (1983)
6309817
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /organism="Bscherichia coli W3110"
/mol_type="genomic DNA"
/strain="K-12"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gub_gtrain="W3110"
/db_xref="taxon:316407"
/dap="91.8 min"
/tissue lib="Kohare lambda-1F8"
380. .877
/gene="ubic"
/gene="ubic"
/gene="ubic"
/function="enzymatic chorismate ---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 product="chorismate lyase"
protein_id="AAA24711.1"
db_xref="GI:148100"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complement (1917. .2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement (1917. .2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              codon start=1
transI table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           citation=[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         citation=[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   390. .1762
/gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          890. .1762
/gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gene="plag"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        oyruvate"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  chorismate lyase
Unpublished (1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ecorded.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          . .2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ecorded
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ASPLY"
                                                                                                                                                                                  ORGANISM
                                                                                                                                                                                                                                                                                       REFERENCE
AUTHORS
TITLE
JOURNAL
PUBNED
REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    JOURNAL
   VERSION
KEYWORDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMMENT
                                                                                                                                                     SOURCE
```

499

45

439

559

65

619

85

105 619 125

739

145

799

```
BCT 05-0CT-1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              106 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     680 AGGGGCCGGAGCTGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTTATCTGTTC 739
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Nishimura,K., Nakahigashi,K. and Inokuchi,H.
Location of the ubiA gene on the physical map of Escherichia coli
J. Bacteriol. 174 (17), 5762 (1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bacteria; Proteobacteria; Gammaproteobacteria; Enterobacteriales;
Enterobacteriaceae; Escherichia.
                                                                                                                                                                                                                                                                                                                                                                                                        440 CTGGATCCGCAACTGCTCGACTGCTGGAGGATTCCATGACAAAACGTTTTGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                IleProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             740 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                            6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                 26 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                         GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              500 CAGCAGGAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    560 Arccccaacaacrccccrccrcccaaacacrccrracrccrracrccraaarrrrc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
               /product="sn-glycerol-3-phosphate acyltransferase"
|protein_la_AAAA_718.1"
|db_xref="d1:1481.09"
|translation="MKVYQLLAELITSDVRLTIESATQGEG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         4-hydroxybenzoate octaprenyl transferase; 4-hydroxybenzoate synthetase; chorismate lyase. Escherichia coli Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ECUBIAC 2034 bp DNA linear E.coli ubiC and ubiA genes for chorismate lyase and 4-hydroxybenzoate octaprenyltransferase.
                                                                                                                                         2000
165
0
0
                                                                                                                                                                              Conservative:
Mismatches:
Indels:
                                                                                                                                           Length:
Matches:
                                                                                                                                                                                                                                                                       (1-2000)
                                                                                                                                                                                                                                     Gaps:
                                                                                                                                                                                                                                                                      US-10-718-311-16 (1-170) x ECOUBIPLS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AlaSerProLeuTyr 170
                                                                                                                                       1.17e-79
854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCGTCACCGTTGTAC 874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (bases 1 to 2034)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        X57434 X57434.1 GI:43233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Direct Submission
                                                                                                                                                                                           Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nishimura
                                                                                                                                                                              Percent Similarity:
                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                           46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          860
                                                                                                                                             ..
No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 15
ECUBIAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REFERENCE
AUTHORS
TITLE
JOURNAL
PUBMED
REFERCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VERSION
KEYWORDS
                                                                                      ORIGIN
                                                                                                                                                                                                                                                                                                                                          쉽
                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                å
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    යු
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            名
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /codon state=1
/transl_table=11
/product==-chorismate lyase"
/product==-chorismate lyase"
/product==-chorismate lyase"
/protein id="AA24716.1"
/db_xref="G1:148107"
/translation="MSHPALYQLRALRYCKEIPALDPQLLDWLLLEDSMTKRFEQQGK
TVSVTMIREGFVEQNEIPEEDFLPKESRYWLREILLCADGEPWLAGRTVVVSTLSG
PELALOKUGKTPLGRYLFTSSTLITRDFIEIGRDAGLWGRRSRIRLSGKPLLLTELFLP
ASPLY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /codon_start=1
/transl_table=11
/producE="4-hydroxybenzoate-octaprenyl transferase"
/protein_id="AAA24717.1"
/db_xref="GI:L48108"
/translation="MEWSLTQNKLLAFHRLMRTDKPIGALLLIWPTLWALWVATPGVP
                                                                                                                        of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OLWILAVFVAGVWLMRAAGCVVNDYADRKFDGHVKRTANRPLFSGAVTEKEARALFVV
LVLISFLLVLTLINTWILLLSIAALALAWVYPFMKRYTHLPQVVLGAAFGWSIPMAFAA
VSESVPLSCWLMFLANILWAVAYDTQYAMVDRDDDVKIGIKSTAILFGQYDKLIIGIL
QIGVLALMAIIGELNGLGWGYYWSILVAGALFVYQQKLIANREREACFKAFMNNYVG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 note="N-terminal amino acid sequence of chorismate lyase
.NH2-SHPALTQLRALRYCEIPAL-"
'citation=[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene="plsB"
"PEC_number="2.3.1.15"
FEC_number="2.8.0phosphatidic acid synthesis"
function="lysophosphatidic acid synthesis"
/experiment="experimental evidence, no additional details
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'experiment="experimental evidence, no additional details
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   no additional details
                                                       2 (bases 1 to 2000)
Nichols, B.P. and Green, J.M.
Cloning and sequencing of Escherichia coli ubiC and purification chorismate lyase
J. Bacteriol. 174 (16), 5309-5316 (1992)
Lightner,V.A., Bell,R.M. and Modrich,P.
The DNA sequences encoding plsB and dgk loci of Escherichia coli
J. Biol. Chem. 258 (18), 10856-10861 (1983)
6309817
                                                                                                                                                                                                 strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /function="enzymatic chorismate --> p-hydroxybenzoate +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      890. .1762
/gene="ubiA"
890. .1762
/function="ubiA"
/function="enzymatic - 3-octaprenyl-4-hydroxybenzoate
synthesis"
                                                                                                                                                                                     Criginal source text: Escherichia coli (sub_strain W3110, str:
X-12) (library: Kohara lambda) DNA.
Location/Qualifiers
Location/Qualifiers
/ . 2000
/ organism="Escherichia coli W3110"
/ strain="K-12"
/ sub_strain="W3110"
/ db xref="taxon:316407"
/ tissue lib="Kohara lambda"
380 . 877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   'experiment="experimental evidence,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement (1917. .2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   complement (1917. .2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /citation=[1]
/codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LVLFLGLAMSYWHF"
                                                                                                                                                                                                                                                                                                                                                                                                               /gene="ubic"
380. .877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /citation=[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene="ubic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene="plsB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                pyruvate"
                                                                                                                                                                                                                                                                                                                                                                                                                                .877
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                recorded"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      recorded"
       AUTHORS
TITLE
JOURNAL
PUBMED
REFERENCE
AUTHORS
TITLE
                                                                                                                                                     JOURNAL
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                      CDS
                                                                                                                                                                                                                                 FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                                                                                                                                                             COMMENT
```

619 105

82

559

65

439

25

499

45

```
/codon start=1
/transI_table=11
/transI_table=11
/product="4"+0ydroxybenzoate octaprenyltransferase"
/product="4"+0ydroxybenzoate octaprenyltransferase"
/protein_id="CAA40682.1"
/db_xref="GI:43235"
/db_xref="GA:125601"
/db_xref="GOA:126601"
/db_xref="GOA:126601"
/db_xref="GOA:126601"
/db_xref="GOA:126601"
/db_xref="Initiagramstrowsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentsprentspre
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /protein_id="CA440681.1"

(db_xref="G1:41234"

/db_xref="G0A:P26602"

/db_xref="UniprockB/8viss-Prot:P26602"

/translation="WRLLRFCCVLDHLLCFTSPWNFLRXWAFTLCNGEFGMSHPALT

PLLPKESRYWLRELICADGEDWHARDEDWTKREPGGGKTVSVTWTREGFVEQNETPEEL

PLLPKESRYWLRELICADGEDWHAGRTVPSVTTMSGFVEQNETPEEL

PLLPKESRYWLRELICADGEDWHAGRTVPSVTTGSPELALQKLGKTPLGRYLFTSS

TLTRDFIEIGRDAGLWGRRSRLRLSGKPLLLTFLFLPASPLY"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATGTCACCCCGCGTTAACGCAACTGCGTGCGCTGCTATTGTAAAGAGATCCCTGCC 461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CIGGAICCGCAACIGCICGACIGCIGIIGCIGGAGGAIICCAIGACAAAACGIIITIGAA 521
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   25
Submitted (28-JAN-1991) K. Nishimura, Faculty of Sciences, Kyoto University, Sakyo-ku, Kyoto 606, Japan Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LeuAspProGlnLeuLeuAspTrpLeuLeuCeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGGGAATGAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          product="4-hydroxybenzoate synthetase"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2034
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
Conservative:
Mismatches:
                                                                                        1. .2034
/organism="Escherichia coli"
/mol_type="genomic DNA"
/strain="K12 W110"
/db_xref="taxon:562"
/map="91.7 min"
/clone==634"
/clone libe="Kohara library"
137. .142
                                                                                                                         coli"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-718-311-16 (1-170) x ECUBIAC (1-2034)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               codon start=1
transI table=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  912. .1784
/gene="ubiA"
912. .1784
/gene="ubiA"
                                                                                                                                                                                                                                                                                                                                                                                                                  291. .899
/gene="ubic"
291. .899
/gene="ubic"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.2e-79
854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                -35_signal
-10_signal
gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     462
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  522
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred. No.:
   JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ઠે
```

```
821
                                                                                                                                           165
105
                  701
                                             125
                                                                    761
                                                                                             145
                                                                                                                                                                  881
             642 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTCCTGTGTCTCAACGTTA
                                             106 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysLeuPhe
                                                           702 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAAGCCCGTTAGGACGTCTTTC
                                                                                                        LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                          126 ThrSerSerThrLeuThrArgAspPhelleGlulleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                           146 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                    Search completed: May 30, 2006, 05:52:57 Job time : 5159.27 secs
                                                                                                                                                                                                        166 AlaSerProLeuTyr 170
98
                                                                                                                                                                                                                  882
                g
                                                                g
                                                                                                             셤
                                                                                                                                                                 셤
                                     8
                                                                                    ⋧
                                                                                                                                          ò
                                                                                                                                                                                          ò
```

```
Command line parameters:
-0=/abss/AasswEB spon.model -DEV=xlp
-0=/abss/AasswEB spool/US10718311/runat_26052006_164922_13534/app_query.fasta_1
-0=/abss/AasswEB spool/US10718311/runat_26052006_164922_13534/app_query.fasta_1
-0=/abss/AasswEB spool/US10718311/runat_26052006_164922_13534/app_query.fasta_1
-0=/abss/AasswEB spool/US10718311/spool-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-superse_n=/amsta_10-supe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 7, Appli
Sequence 12, Appli
Sequence 24, Appl
Sequence 25, Appl
Sequence 25, Appl
Sequence 1234, Appl
Sequence 1234, Appl
                                                                                                                                                                                                                                                                                                                                                           (without alignments)
2304.491 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 16, Appl
Sequence 7, Appl:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 MQVWHMSHPALTQLRALRYC......RLSGKPLLLTELFLPASPLY 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /EMC_Celerra_SIDS3/ptodata/2/ina/backfilesi.seg:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Description
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         lssued_Patents_NA:*
l: /EMC_Celerra_SIDS3/ptodata/2/ina/1_COMB.seq:*
2: /EMC_Celerra_SIDS3/ptodata/2/ina/5_COMB.seq:*
4: /EMC_Celerra_SIDS3/ptodata/2/ina/6B_COMB.seq:*
4: /EMC_Celerra_SIDS3/ptodata/2/ina/6B_COMB.seq:*
5: /EMC_Celerra_SIDS3/ptodata/2/ina/T_COMB.seq:*
6: /EMC_Celerra_SIDS3/ptodata/2/ina/T_COMB.seq:*
7: /EMC_Celerra_SIDS3/ptodata/2/ina/PCTUS_COMB.seq:*
8: /EMC_Celerra_SIDS3/ptodata/2/ina/PCTUS_COMB.seq:*
9: /EMC_Celerra_SIDS3/ptodata/2/ina/PCTUS_COMB.seq:*
7: /EMC_Celerra_SIDS3/ptodata/2/ina/PCTUS_COMB.seq:*
9: /EMC_Celerra_SIDS3/ptodata/2/ina/PCTUS_COMB.seq:*
7: /EMC_Celerra_SIDS3/ptodata/2/ina/PCTUS_COMB.seq:*
7: /EMC_Celerra_SIDS3/ptodata/2/ina/PCTUS_COMB.seq:*
7: /EMC_Celerra_SIDS3/ptodata/2/ina/PCTUS_SEQ:*
7: /EMC_CE
                                                                                                                                                                                                                                                                                                    May 29, 2006, 11:01:13 ; Search time 207.045 Seconds
GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
                                                                                                                                                                                        nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-896-866B-16
US-09-855-341-7
US-09-896-866B-12
US-09-855-341-3
US-09-064-693A-24
US-09-064-693A-25
US-09-648-039A-1234
US-09-43-681A-3123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1403666 seqs, 935554401 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BLOSUM62
Xgapop 10.0 , Xgapext
Ygapop 10.0 , Ygapext
Fgapop 6.0 , Fgapext
Delop 6.0 , Delext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-718-311-16
887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                684
684
495
495
854
6641
645
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          100.0
100.0
96.3
96.3
96.3
75.9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8887
8854
854
854
854
673
                                                                                                                                                                                                   OM protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Searched:
                                                                                                                                                                                                                                                                                                    Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Result
```

Sequence 7442, Ap Sequence 1889, Ap	ance 34	e 73	9 1	equence 77	7 :	12	60	0	2	20	10	16	m	16	13	14	14	14	12	equence 3,	'n	equence 1,	0	ъ	equence 47	equence 1,	equence 1,	'n	equence 1,	equence 1,	e a	Sequence 3, Appli	е 1,	e 1,
4-4	-09-328-352-343	-09-252-991A-7	09-543-681A-30	-08-818-780-75	09-10/-433-1/21	-09-949-016-I	-09-949-016-696	09-583-110-1232	19-252-991A-1064	-09-252-6	19-252-991A-1043	-949-016-	.08-962-284	.09-949-016-1640	09-949-016-1379	-09-949-016-1427	-09-949-016-142	19-949-016-1428	-09-949-016-1211	-09-754-250-	-10-094-	09-679-27	-09-103-8	S-09-103-840A-	-09-799-451-	-08-250-859-	-08-347-029	-08-490-803-	-08-457-254-	-08-484-257-	-666-80-	61-819-	-0880	PCT-US95-01775-1
n m r	'n	ო (ກ ເ	.	n r	ກ ເ	~ 1	m (m	m	m	m	~	ო	m	٣	m	۳	m	m	ო	m	m	ო	m	N	N	~	~	~	ო	m	7	7
630 519 269233	;	4	195	/717	•	4444	T09	807	1176	1581	2055	62354	6463	87	24	75	75	75	044	112	111282	47981	4403765	S	24	1486	48	œ	48	48	48	48	œ	48
19.7		٠,			•	•	٠	•	٠		•	•	•						•															
174.5 171.5	15	146.5	NO	y 9	0 0	200	87	82	81	81	81	81	80	80	80	80	80	80	80	80	œ	φ.	79.5	σ.	7	78.5	ω.	ω.	œ.	œ.	8	æ	8	θ.
110	12	13	→ 1.	מין	9 F	` .	9 6	٠. م	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
			υ			ט							υ																					

ALIGNMENTS

RESULT 1 US-09-896-866B-16

```
APPLICANT: Plint, Dennis
APPLICANT: Plint, Dennis
APPLICANT: Rint, Dennis
APPLICANT: Meyer, Knut
APPLICANT: Meyer, Knut
APPLICANT: Meyer, Knut
TITLE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugate
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Dence:
TITLE OF INVENTION: UNDER: US/09/896,866B
PRIOR FILING DATE: 2000-07-07
NUMBER OF SEQ ID NOS: 19
SEQ ID NO 16
LENGTH: 684
TYPE: DNA
ORGANISM: Artificial Sequence
FRATURE:
TYPE: DNA
ORGANISM: Artificial Sequence
FRATURE:
OTHER INFORMATION: Open reading frame of the chloroplast-targeted CPL fusion protein
US-09-896-866B-16
Alignment Scores:
MAMB/KEY: Miscoeft Office 97
Score:
Dreser Local Similarity: 100.0$
Percent Similarity: 100.0$
Ouery Matches: 0
Ouery Match
```

```
GlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAsp 140
                                                                                                                                                                                                                                                                                                                                                                                          AlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThr 160
                                                                   231
                                                                                                                                                                     351
                                                                                                                                                                                                                   411
                                                                                                                                                                                                                                            | LeuargGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValVal 100
                                                                                                                                                                                                                                                                                          ProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeu 120
                                                                                                                                                                                                                                                                                                         CCTGTGTCAACGTTAAGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAAACGCCGTTA 531
                                                                                                                      291
                                                                                                                                                                                                                                                                   471
                                                                                                                                                                                                                                                                                                                                                                                                        GCCGGCTGTGGGGGGGGAACGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAAAAA 651
                                                                                              40
                                                                                                                                                                                             80
                                                                                                                                              9
                                                                                            GTCGAGCAGAATGAAATCCCCGAAGAACTGCCGCTGCTGCTGCCGAAAGAGTCTCGTTACTGG
                                                                                                                                                                                             ValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrp
                                                                                                                                                                                                                                                       TTACGTGAAATTTTGTTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTGCTTA
                                                                                                                                                                                                                                                                                                                                                       MetGlnValTrpHisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCys
                                                              ; OTHER INFORMATION: Description of Artificial Sequence: synthetic CPL US-09-855-341-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
APPLICANT: VITTANEN, PAUL V.
APPLICANT: WEXER, KNUT
APPLICANT: WAN DYK, DREW
TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID
TITLE OF INVENTION: IN GREEN PLANTS
FILE REFERENCE: BC1015 US NA
CURRENT APPLICATION NUMBER: US/09/855,341
CURRENT FILING DATE: 2001-05-15
NUMBER OF SEQ ID NOS: 16
SEQ ID NO 7
LENGTH: 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       684
170
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
Conservative:
Mismatches:
Indels:
                        US-10-718-311-16 (1-170) x US-09-896-866B-16 (1-684)
                                                                                                                                                                                                                                                                                                                                                                                                                                           GlubeuPhereuProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                        // Sequence 7, Application US/09855341
// Patent No. 6683231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1.94e-100
887.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: DNA ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score:
Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 2
US-09-855-341-7
                                                Н
                                                                     172
                                                                                              21
                                                                                                                      232
                                                                                                                                                                                             61
                                                                                                                                                                                                                    352
                                                                                                                                                                                                                                             81
                                                                                                                                                                                                                                                                   412
                                                                                                                                                                                                                                                                                           101
                                                                                                                                                                                                                                                                                                                   472
                                                                                                                                                                                                                                                                                                                                           121
                                                                                                                                                                                                                                                                                                                                                                    532
                                                                                                                                                                                                                                                                                                                                                                                            141
                                                                                                                                                                                                                                                                                                                                                                                                                    592
                                                                                                                                                                                                                                                                                                                                                                                                                                           161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE:
                                                                                                                                                              g
                                                                                                                                                                                   8 6
                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                          δ
                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                               a
                                                                                                                                                                                                                                                                                                                                                                                                                                           õ
                                                                  셤
                                                                                              ò
                                                                                                              엄
                                                                                                                                      ठे
                                                                                                                                                                                                                                          ઠે
```

US-10-718-311-16 (1-170) x US-09-855-341-7 (1-684)

```
ASPULLS.

Sequence 12, Application US/09896868

Sequence 12, Application US/09896868

Patent No. 664200.

APPLICANT: Plint, Dennis

APPLICANT: Plint, Dennis

APPLICANT: Mittanen, Paul

TITLE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugates

TITLE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugates

TITLE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugates

TITLE OF INVENTION: Benzoic Acid Glucosides

FILE REFERENCE: BC1034 US NA

CURRENT PPLION DATE: 2001-06-29

PRIOR FILING DATE: 2000-07-07

PRIOR FILING DATE: 2000-07-07

NUMBER OF SEQ ID NOS: 19

SOFTWARE: Microsoft Office 97

FEAST IN NOS: 19
                                                                                                                                                                 411
                                                                                                                                                                                          100
                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                            140
                                                                                                               351
                                                                                                                                                                                                                471
                                                                                                                                                                                                                                                                   531
                                                                                                                                                                                                                                                                                                                     591
                                                                                                                                                                                                                                                                                                                                             141 AlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThr 160
           231
                                                            291
                                                                                                                                                                                                                                                                                                                                                           GCCGGGCTGTGGGGGGCGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAACA 651
                                     40
                                                                                       9
                                                                                                                                        80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      25
                                                                                                                                      ProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeu
                                                                                                                                                                                                                                                       GlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPhe1leGluIleGlyArgAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   41 ThrLysArgPheGluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPhe
                                                                                                     ACAAAACGTTTTGAACAGCAGGAAAAAACGGTAAGCGTGAGCGTGACGATGATCCGCGAAGGGTTT
                                                                                                                                                                                                                                                                                                          GGACGCTATCTGTTCACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGAT
                                      21 LysGlulleProAlaLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       495
1165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-718-311-16 (1-170) x US-09-896-866B-12 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                               161 GluLeuPheLeuProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                            652 GAACTGTTTTTACCGGCGTCACCGTTGTAC 681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1.48e-96
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
CRGANISM: Escherichia coli
US-09-896-866B-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
                                                                                                                                         61
                                                                                                                                                                 352
                                                                                                                                                                                                                                            101
                                                                                                                                                                                                                                                                   472
                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                     532
                                                                                                                                                                                                                                                                                                                                                                      592
                                                      g
                                                                                                                                                           a
                                                                                                                                                                                                           유
                                                                                                                                                                                                                                                            8 8
                                                                                                                                                                                                                                                                                                                                                                  유
      g
                             8
                                                                                     ઠે
                                                                                                        g
                                                                                                                                 ઠે
                                                                                                                                                                                          8
                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
```

셤

ò a ઠે a

g

ઠે

셤

Š

g

ઠે

日

ઠે

임

ઠે

```
LeuCysAlaAspGlyGluPxoTrpLeuAlaGlyArgThxValValValProValSerThxLeu 105
                                                                                                                                                                        241 TTATGTGCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA 300
                                                                                                                                                                                                                        125
                                                                                                                                                                                                                                              361 ACATCATCGACATTAACCCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGGTGTGTGGGGGG 420
                       121 CAGCAGGAAAAAGGGTAAGGGTGACGATGATCCGCGAAGGGTTTGTCGAGAAGGA 180
                                                                                                                                                                                                                                                                                                126 ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 145
                                                                                                                                                                                                                      106 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                       66 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                          46 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Geguence 24, Application US/09064693A

Patent No. 6210937

GENERAL INFORMATION:
TITLE OF INVENTION: DEVELOPMENT OF GENETICALLY
TITLE OF INVENTION: DEVELOPMENT OF RECTRIA FOR PRODUCTION
TITLE OF INVENTION: OF A SPECIFIC PLASTICS PRECURSOR
NUMBER OF SEQUENCES: 26

CORRESPONDENCE ADDRESS:
ADDRESSEE: W. Gary Goodson
ADDRESSEE: INEEL--Lockheed Martin Idaho
ADDRESSEE: Technologies Co.
STREET: P.O. Box 1625
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ZIP: 8415-3810
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 3.5 inch, 1.44 Mb storage COMPUTER: Toshba Satellite Pro 72150CDS OPERATING SYSTEM: Windows95
SOFTWARE: Word Perfect 7.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/064,693A
FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE:
FATORNEY/AGENT INFORMATION:
NAME: W. GARY GOOGSON
REGISTRATION NUMBER: 22,387
REFERRICE/DOCKET NUMBER: LITTELECOMMUNICATION: INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 22,387
                                                                                                                                                                                                                                                                                                                                                                                                                                                   166 AlaSerProteuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      481 GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TELEPHONE: (208)526-9469
TELEFAX: (208)526-8339
INFORMATION FOR SEQ ID NO: 24
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LENGTH: 854 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT 5
US-09-064-693A-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ;
TOPOLOGY:
US-09-064-693A-24
                                                                                                                                               98
                             셤
                                                                                                  셤
                                                                                                                                                                              요
                                                                                                                                                                                                                                                     임
                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                         ઠે
                                                                                                                                             ò
                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                    LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105
                                                                                                                                                                                                                                                                                            106 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                                                                                                                                                                                                 361 ACATCATGGACATTAACCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGG 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61 CTGGATCCGCAACTGCTCGACTGGTGGTGGTTCCATGACAAACGTTTTGAA 120
                                                                                              240
                                                                                                                                                                                                                                                         241 rrargraccardardarccrescrreccesrcraccercerrecrererargand
                                                                                                                                                                                                                                                                                                                                                                         145
                                                                                                                                                                                                                                                                                                                                                                                                                                                 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            65
                                                                                                                                               85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           9
                                                                   46 GinGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                             181 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGACTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                       126 ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 Argreacecececerraacecaaerecerecerecerarreraaaeagareeereee
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: VITTAMEN, PAUL V.
APPLICANT: WEXER, KNUT
APPLICANT: VITTAMEN, ENUT
APPLICANT: VAN DYF, DREW
APPLICANT: VAN DYF, DREW
TITLE OF INVENTION: HIGH LEVEL ERODUCTION OF P-HYDROXYBENZOIC ACID
TITLE OF INVENTION: IN GREEN PLANTS
FILE REFERENCE: BC1015 US NA
CURRENT APPLICATION NUMBER: US/09/855,341
CURRENT APPLICATION DATE: 2001-05-15
NUMBER OF SEQ ID NOS: 16
SSCTWARE: MICROSOFT OFFICE 97
LENGTH: 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    495
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OTHER INFORMATION: Description of Unknown Organism: E.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-718-311-16 (1-170) x US-09-855-341-3 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 3, Application US/09855341 Patent No. 6683231 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         166 AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              481 GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.48e-96
B54.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA
ORGANISM: Unknown Organism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-855-341-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                 146
                                                                                                                                                                                                                    98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match:
```

셤

ઠ

ઠે

```
ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       106
                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
                                                                                                                                                                                                                                                                                                                               CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAACGTTTTGAA 440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ThrSerSerThrLeuThrArgAspPhelleGlulleGlyArgAspAlaGlyLeuTrpGly 145
                                                                                                                                                                                                                                                            380
                                                                                                                                                                                                                                                                                                                                                                                                                       560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         THITELECTOR TO THE THE THE TELEVISION OF THE THE THE THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISION OF THE TELEVISIO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ArgargSerArgleuArgleuSerGlyLysProleuLeuLeuThrGluLeuPheLeuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CGACGTTCCCGCCTGCGATTAAGCGGTAAAACCGCTGTTGCTAACAGAACTGTTTTTACCG 800
                                                                                                                                                                                                                     25
                                                                                                                                                                                                                                                                                                      45
                                                                                                                                                                                                                                                                                                                                                                                            65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             85
                                                                                                                                                                                                                                                                                                      LeudapproGlnLeuLeudapTrpLeuLeuGludapSerMetThrLysdrgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                          GlnGlnGlyLygThrValSerValThrMetlleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IleProGluGluLeuProLeuLeuProLysGluSexArgTyrTrpLeuArgGlu1leLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGGG
                                                                                                                                                                                                                 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGlulleProAla
                                                                                                                                                                                                                                                            ADDRESSE: INELLY ADDRESSE: ADDRESSE: INELLY TITLE OF INVENTION: BEVELOPMENT OF GENETICALLY TITLE OF INVENTION: BY ANGINEBRED BACTERIA FOR PRODUCTION TITLE OF INVENTION: BY ANGINEBRED BACTERIA FOR PRODUCTION TITLE OF INVENTION: OF A SPECIFIC PLASTICS PRECURSOR NUMBER OF SEQUENCES: 26 CORRESPONDENCE ADDRESSE: W. Gary Goodeon ADDRESSEE: W. Gary Goodeon ADDRESSEE: INELL-Lockheed Martin Idaho ADDRESSEE: Technologies Co. ATREET: P.O. Box 1625 CITY: Idaho Falls STATE: Idaho Falls STATE: Idaho Falls
                    854
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ZIP: 8415-3810
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 3.5 inch, 1.44 Mb storage
COMPUTER: Toshiba Satellite Pro T2150CDS
OPERATING SYSTEM: Windows95
SOFTWARE: Word Perfect 7.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/064,693A
                  Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                        US-10-718-311-16 (1-170) x US-09-064-693A-24 (1-854)
                                                                                                                                  Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 6
US-09-064-693A-25
Sequence 25, Application US/09064693A
; Patent No. 6210937
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      801 GCGTCACCGTTGTAC 815
                    3.39e-96
854.00
100.0%
100.0%
                                                      Percent Similarity:
Best Local Similarity:
Query Match:
DB:
Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                   ø
                                                                                                                                                                                                                                                                                                      56
                                                                                                                                                                                                                                                                                                                                                 381
                                                                                                                                                                                                                                                                                                                                                                                            46
                                                                                                                                                                                                                                                                                                                                                                                                                                       441
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       요
                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                            a
                                                                                                                                                                                                                                                                                                      8
                                                                                                                                                                                                                                                                                                                                        요
                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                               8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
```

```
US-09-489-039A-1234
; Sequence 1234, Application US/09489039A
; Patent No. 6610836
; Patent No. 8610836
; ARBERL INFORMATION:
; APPLICANT: Gary Breton et. al
; TITLE OF INVENTION:
; TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  620
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      380
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyAkgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        26 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66 IleProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   501 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      126 ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      681 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGG
                                                                                                                                                                                                                                                                                                                                                             6641
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-718-311-16 (1-170) x US-09-064-693A-25 (1-6641)
FILING DATE:
CLASSIFICATION 435
CLASSIFICATION DATA:
APPLICATION DATA:
APPLICATION NUMBER:
FILING DATE:
ATTONNEY/AGENT INFORMATION:
NAME: W. GARY GOOGBON
REGISTRATION NUMBER: 22,387
REFERENCE/DOCKET NUMBER: LIT-PI-296
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION INFORMATION:
TELEPHONE: (208) 226-9469
TELEPHONE: (208) 226-9469
TELEPHONE: (208) 226-9469
INFORMATION FOR SEQ ID NO: 25:
SEQUENCE CHARACTERISTICS:
LENGTH: 6641 base pairs
TYPE: nucleic acid
TYPE: nucleic acid
TYPE: nucleic acid
STRANDEDNESS: double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           166 AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                               7.76e-95
854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             815
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; TOPOLOGY: linear
US-09-064-693A-25
                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                Alignment Scores:
```

```
RESULT 9

US-09-252-991A-7442

i Sequence 7442, Application US/09252991A

i Sequence 7442, Application US/09252991A

i Patent No. 6551795

i GENERAL INFORMATION:

i PAPLICANT: Marc J. Rubenfield et al.

i TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS

i TITLE OF INVENTION: ARUGINOSA FOR DIAGNOSTICS AND THERAPEUTICS

i TITLE OF INVENTION: 10916.136

i CURRENT APPLICATION NUMBER: US 60/074,788

i PRIOR PELING DATE: 1998-02-18

i PRIOR PILING DATE: 1998-02-18

i PRIOR PILING DATE: 1998-07-27

i NUMBER OF SEQ ID NOS: 33142

i SEQ ID NO 7442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  91 GluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGluLeu 110
                                                                                                                                                                                                                                                                                                                                     109 TTAAGTTGGCTGCTGGAATTAGGTTCAATGACACGACGTTTTGAGACAACATTGCCATCAA 168
                                                                                                                                                                                                                                                                                                                                                                                            289 GTACCTTGGTTATTAGGGCGAACATTAGTGCCGGAAGAGACATTAACGGGTGAAGATCGC 348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               349 CAATTAGTGAATTTGCGTACGGTGCCATTAGGACGTTATCTGTTCCAGGAAACAACCTTA 408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      229 AAGTGTTTACCTTATAGCCGACGCTATTCGCTAAGAGAAATCGTCCTTTGTGGGGGATAAT 288
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  131 ThrargasppheileGluileGlyargaspalaGlyLeuTrpGlyargargSerargLeu 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       151 ArgleuSerGlyLysProLeuLeuThrGluLeuPheLeuProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                 LeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGluGlnGlnGlyLysThr 50
                                                                                                                                                                                                                                                                                                                                                                     51 ValSerValThrMetIleArgGluGlyPheValGluGlnAsnGluIleProGluGluLeu 70
                                                                                                                                                                                                                                                                                                                                                                                                                                             71 ProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAspGly 90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          111 AlakeuGlnLyskeuGlyLysThrProLeuGlyArgTyrLeuPheThrSerSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  630
21
30
30
30
                                                                                                                                   537
81
15
44
0
                                                                                                                                                                                                                                                              US-10-718-311-16 (1-170) x US-09-543-681A-3122 (1-537)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                           Conservative:
                                                                                                                                                                                        Mismatches:
Indels:
                                                                                                                                                      Matches:
                                                                                                                                     Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: DNA
ORGANISM: Pseudomonas aeruginosa
                                                                                                                                 2.74e-40
401.00
68.6%
57.9%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1.67e-13
186.00
43.0%
30.3%
21.0%
                                           TYPE: DNA ORGANISM: Proteus mirabilis
                                                                                                                                                                       Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                               US-09-543-681A-3122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-252-991A-7442
                                                                                                                  Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
         SEQ ID NO 3122
                            LENGTH: 537
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH: 630
                                                                                                                                                                                                                                                                                                   31
                                                                                                                                                                                                       Query Match:
DB:
                                                                                                                                     Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred. No.:
                                                                                                                                                      Score:
                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 3122, Application US/09543681A
Patent No. 6605709
Batent No. 6605709
BATENT INFORMATION:
APPLICANT: GARY BRETON
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PROTEUS MIRABIL
FILLE REFERENCE: 2709.1002-001
CURRENT APPLICATION NUMBER: US/09/543,681A
CURRENT FILING DATE: 1999-04-05
PRIOR PAPLICATION NUMBER: US 60/128,706
PRIOR PAPLICATION NUMBER: US 60/128,706
PRIOR SEQ ID NOS: 8344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          268 CAACAAGGAAAGCAGGTCACCGTGACCCTGGTTAACGAAGGGTATATCGGCCGTGACGCG 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  328 CTGACTGACGAAAGCGGCGCTGCTGCCCGACGACGCGCTACTGGCTGCGGGAGATTATA 387
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       106 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                507
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ArgargSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             627
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105
                                                                                                                                                                                                                                                                                                                                                                                                                              25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           66 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGlu1leLeu 85 ::: :::||| |||||||||||:::
                                                                                                                                                                                                                                                                                                                                                                                                                          MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                             46 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 448 TGTGGTCCGGAGCTGGCGCTACAGCAGCTCGGGCAAACTCCGCTGGGCCGATACCTGTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        568 GGTCGTTCCCGCCTGCGGCTGAGCGCGCAAACCCCTGCTGCTGACCCGAGCTTTTTTTGCCT
TITLE OF INVENTION: PNEUMONIAE FOR DIAGNOSTICS AND THERAPEUTICS FILE REFERENCE: 2709_2004001
CURRENT APPLICATION NUMBER: US/09/489,039A
CURRENT FILING DATE: 2000-01-27
PRIOR APPLICATION NUMBER: US 60/117,747
NUMBER OF SEQ ID NOS: 14342
SEQ ID NO 1234
LENGTH: 645
                                                                                                                                                                                                                                                              645
129
16
20
0
                                                                                                                                                                                                                                                                                                                                                                                      US-10-718-311-16 (1-170) x US-09-489-039A-1234 (1-645)
                                                                                                                                                                                                                                                          Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                    Gaps:
                                                                                                                                                                                  ORGANISM: Klebsiella pneumoniae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 628 GCGTCGCCGTTGTAC 642
                                                                                                                                                                                                                                                            6.39e-74
673.00
87.9%
78.2%
75.9%
                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                     US-09-489-039A-1234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 8
US-09-543-681A-3122
                                                                                                                                                                                                                                           Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                            φ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         146
                                                                                                                                                                   TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               166
                                                                                                                                                                                                                                                                                                                                 Query Match:
                                                                                                                                                                                                                                                            Pred. No.:
                                                                                                                                                                                                                                                                               Score:
```

ò 셤 ઠે g ò පු õ a ò a ð 쉽 ò g ò 셤 ઠે 셤 φ

```
295 TTTCCTTTGTCATCACTGACAGGTTCATTAGCACGCCTAAAAGCACTGGGTGCAACGCCC 354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120 LeuGlyArgTyrLeuPheThrSerSer-----ThrLeuThrArgAspPheIleGlu 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  137 IleGlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLy8Pro 156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      64 CTGCCTCCAAAACTTGCCGATTTTGTATTTACTCAAGGGTCGTTAACGGCACGATTAGAA 123
                                                                                                        124 GCACACTCAAAAAACCCCTAAAGGTTGAAATCATCCATCAAGGCTATCAGCCACTCACC 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICANT:
APPLICANT:
APPLICANT:
APPLICANT:
BEGG Kim, L.
APPLICANT:
BEGG Kim, L.
APPLICANT:
BEGG Kim, L.
APPLICANT:
BEGG Kim, L.
APPLICANT:
BEGG Kim, L.
APPLICANT:
BEGG Kim, L.
APPLICANT:
BEGG Kim, L.
APPLICANT:
BEGG Kim, L.
AUCLEOTIDE SEQUENCES OF MORAXELLA CATARRHALIS GENOME
FILE REFERENCE:
PM-0008-4 US
CURRENT APPLICATION NUMBER: US/09/596,002
CURRENT FILING DATE: 1200-06-18
PRIOR PILING DATE: 1999-06-18
NUMBER OF SEQ ID NOS:
SOFTWARE:
SOFTWARE:
AUNMER OF SEQ ID NOS:
AUNMER OF SEQ ID NOS:
                                                                                                                                                                                                                                                                                                                                                                                   100 ValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ||| ||| ||||:::||| |||::::|:
CTGCCTCCAAAACTTGCCGATTTTGTATTTACTCAAGGGTCGTTAACGGCACGATTAGAA
                                                                                                                                                                                                                                                                       TrpLeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATCĠĠĀTATGTTŤTĠŤŤĊAAAAAAGGCAACAACTGCCCAATTAAGCĠTCATŤŤTAT---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                              60 PheValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       46 GlnGlnGly---LysThrValSerValThrMetileArgGluGly--------
                                                     GlnGlnGly---LysThrValSerValThrMetIleArgGluGly-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                269223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             946
134
155
6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME/KEY: misc feature
OTHER INFORMATION: Incyte template ID No. 6632636
PUBLICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-718-311-16 (1-170) x US-09-596-002-41 (1-269223)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             157 LeuLeuThrGluLeuPheLeuProAla 166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            466 ATCTTGATGAGCTATTTTTGCCAGCT 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence 41, Application US/09596002
Patent No. 6632636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORGANISM: Moraxella catarrhalis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1.09e-07
171.50
53.3%
30.7%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LENGTH: 269223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 11
US-09-596-002-41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-596-002-41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQ ID NO 41
                                                                                                                                                                                                                                                                          80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 355
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    16824
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pred. No.:
                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                               ద
                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                     ò
                                                                                                요
                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                       ઠ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: Gary L. Breton et al.
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO MORAXELLA CATAR
TITLE OF INVENTION: FOR DIAGNOSTICS AND THERAPEUTICS
FILE REFERENCE: 2709.2005-001
CURRENT APPLICATION WINBER: US/09/540,236
CURRENT FILLING DATE: 2000-04-04
NUMBER OF SEQ ID NOS: 3840
                                                                                                           127 CAACTGTCAAGGGTCTCCCCCGCCGTCCTCGACTGTTCGACGAGGGGTCTCTGACC
                                                                                                                                                                                                                                              280 GACGTCCTACCGGCAGTAGCGGCTGGGTCCGCGAGGTCTACCTGCATGGCCACGACCGT 339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        340 CCCTGGGTGTTCGCCCGCAGCGTGGCGGCGCGCAGCGCCCTGGAAGGCTCGGGCTTCGAC 399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cricacacracricida con contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra contra c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -----GlyArgAsp 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         141 AlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThr 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               520 GAGGGCTCTCTGGGGCCGTCGCTCACGGTTTTCCCGCGGGGGCGCTCGGGGTGCTGGTGGTGGT 579
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ProTrpLeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGluLeuAla 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPheThrSerSerThrLeuThr 131
                                                                                                                                                                                        LysArgPheGluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheVal 61
                                                                                                                                                                                                                                                                                                                                                                                                            -----ProLysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAspGlyGlu 91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -----ProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu 45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -- 27
                                                                            22 GlulleProAlaLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThr
                                                                                                                                                                                                                                                                                                                                                      220 CGCGTCGAACCCCTGCTGGAAGGCTGGCAGACCCTGCGACGACGAATGCCAGGGGCTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | | | | ::: | | | ::: | | | | 4 TGTACACTTGTACTAGATGATTTAGACCAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          519
48
36
57
7
                         US-10-718-311-16 (1-170) x US-09-252-991A-7442 (1-630)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                 GluGlnAsnGluIleProGluGluLeuProLeuLeu---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-10-718-311-16 (1-170) x US-09-540-236-1889 (1-519)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ArgAspPhelleGluIle------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 1889, Application US/09540236
Patent No. 6673910
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CystysGluileProAlaLeuAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           161 GluLeuPheLeuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ||||::::::||||||
580 GAGGTGTACCTACCG 594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3.32e-12
174.50
49.4%
28.2%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; ORGANISM: M.catarrhalis
US-09-540-236-1889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 10
US-09-540-236-1889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQ ID NO 1889
LENGTH: 519
                                                                                                                                                                                        42
                                                                                                                                                                                                                                                                                                 62
                                                                                                                                                                                                                                                                                                                                                                                                            74
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       132
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           엄
                                                                                                                            셤
                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                  음
                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                         ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
```

셤 ઠે g ઠે 셤 ð ò g ò 셤

```
General 7361, Application US/09252991A
Patent No. 6551795
GENERAL INFORMATION:
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PSEUDOMONAS
TITLE OF INVENTION: AERCHOROSA FOR DIAGNOSTICS AND THERAPEUTICS
TITLE OF INVENTION NUMBER: US/09/252,991A
CURRENT FILING DATE: 1999-02-18
CURRENT FILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/074,788
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR PILING DATE: 1998-02-18
PRIOR PILING DATE: 1998-02-18
PRIOR PILING DATE: 1998-02-18
PRIOR PILING DATE: 1998-02-18
PRIOR PILING DATE: 1998-02-18
PRIOR PILING DATE: 1998-02-18
PRIOR APPLICATION NUMBER: US 60/094,190
PRIOR PILING DATE: 1998-07-27
NUMBER OF SEQ ID NOS: 33142
                        140 AspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeu 159
100 ValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrPro 119
                                                                                                                                                                                               418 ccagaaggc---regacgceacaagrigtratacrigecaresargraartrargtr 474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ----GlyArgAspAlaGlyLeuTrpGlyArgArgSer 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         65 geggegegekidegeceridgaakddereggerregaedridgegergeridgedaeeegereg 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |||||||
|125 CTGGGCGAGTTGCTGTTCAGCGACAGCGCCTTCGAGCGCGGGCCCATCGAAGTCTGCCGC 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 64
                                                                              120 LeuGlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5 TGGGTCCGCGAGGTCTACCTGCATGGCCACGACGTCCCTGGGTGTTCGCCCGCAGGGTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      100 ValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        80 TrpLeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LeuGlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIle----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     185 TATCCGGCGGCCGGTCTGCCCGCCGAGTCCGCGCGGAGGGTCTCTGGGGCCGTCGCTCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ArgleuArgleuSerGlyLysProLeuleuLeuThrGluLeuPheleuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   295
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1248
35
10
41
11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-718-311-16 (1-170) x US-09-252-991A-7361 (1-1248)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-543-681A-3086/c
Sequence 3086, Application US/09543681A
; Patent No. 6605709
; GENERAL INFORMATION.
                                                                                                                                                                                                                                      160 ThrGluLeuPheLeuProAla 166
                                                                                                                                                                                                                                                                  475 CAAGAAACATTCTTACCGGCT 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3.78e-08
146.50
46.4%
36.1%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                RESULT 13
US-09-252-991A-7361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-252-991A-7361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA ORGANISM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ..
90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score:
                                g
                                                                                                                                                                                             g
                                                                            ò
                                                                                                            셤
                                                                                                                                                     ò
                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-09-328-352-343

US-09-328-352-343

Sequence 343, Application US/09328352

Sequence 343, Application US/09328352

Sequence 343, Application US/09328352

GENERAL INFORMATION:

TITLE OF INVENTION: BAUMANNI FOR DIAGNOSTICS AND THERAPEUTICS

TITLE OF INVENTION: BAUMANNI FOR DIAGNOSTICS AND THERAPEUTICS

FILE REFERENCE: GTC99-03PA

CURRENT APPLICATION NUMBER: US/09/328,352

CURRENT FILING DATE: 1999-06-04

NUMBER OF SEQ ID NOS: 8252

LENGTH: 540
                                                                                                                                     17054
                                                                                                                                                                                               17172 -----CGGTATGATGGTCAAATTGGTCGGCAAAACAGTTTATGATATCAATGGGCGTAAA 17225
                                                                                                99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GTGAGGGAAACCTATTTATATGGCAGTGATGTAGAGCCTTGGGTGAAAGCAAAAGTATT 297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CAACAACTCACTGAGCTGGGTGGTGGGAAGTTCAGCGTAAAAGACATTTCAAAGAACATTTC 177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LeuArgGluIleLeuLeuCys---AlaAspGlyGluProTrpLeuAlaGlyArgThrVal 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GlulleProAlaLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThr 41
              PhevalGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyr
                                         100 ValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrPro
                                                                                                                                                                                                                                                    120 LeuGlyArgTyrLeuPheThrSerSer-----ThrLeuThrArgAspPhelleGlu
                                                                                                                                                                                                                                                                                                                                137 IleGlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLyBPro
                                                                                            80 TrpLeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GlnValTrpHisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LysArgPhe---GluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAGCGTTTAACTTTTGCCGACAGTCAATGGATGAACATGCCCCATACTCACACTTTTGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          540
255
833
12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CAGATTATGCGTAAACGACAACCAGTACTT-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-16 (1-170) x US-09-328-352-343 (1-540)
                                                                                                                                                                                                                                                                                                                                                                                                                                     157 LeuLeuLeuThrGluLeuPheLeuProAla 166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORGANISM: Acinetobacter baumannii
US-09-328-352-343
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2.96e-10
159.00
43.1%
. 28.1%
17.9%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Alignment Scores:
Pred. No.:
                9
                                                     16944
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           81
                                                                                                                                                                                                                                                                                   a
```

8 g ò 셤 ð 요 ò 셤 ઠે

```
Search completed: May 29, 2006, 12:27:09
Job time : 246.045 secs
                                                                                                                             -----
                                                                           Phe----
                                                                            9
                                                                                                                             61
                                                                                                                                                                                                                                                                                                                               102
                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                       요
                                                                                            염
                                                                                                                                              g
                                                                                                                                                                         6 6 6
                                                                                                                                                                                                                                              ద
                                                                                                                                                                                                                                                                             ઠે
                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ð
                   8
                                             g
                                                                     8
                                                                                                                     ò
APPLICANT: GARY BRETON
TITLE OF INVENTION: NUCLEIC ACID AND AMINO ACID SEQUENCES RELATING TO PROTEUS MIRABIL
TITLE OF INVENTION: DIAGNOSTICS AND THERAPEUTICS
FILE REPERENCE: 2709-1002-001
CURRENT APPLICATION NUMBER: US/09/543,681A
CURRENT APPLICATION NUMBER: US/09/543,681A
PRIOR FILING DATE: 1999-04-09
NUMBER OF SEQ ID NOS: 8344
SEQ ID NO 3086
LENGTH: 195
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               :::||||||:::::
1087 GTGCCCGCGGTGGAGGTTTTGGAGCGAAAAGGCTTCGCCCTGCCCTGCCCAAGCCCCGGC 1146
                                                                                                                                                                                                                                                                                                                   137 ileGlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysPro 156
                                                                                                                                                                                                                                                                                                                                   --LeuArgTyrCysLysGlu 22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 --ProGlnLeuLeuAspTrp 33
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ----Ser 39
                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 75, Application US/09818780

Patent No. 6677146

GENERAL INFORMATION:
TITLE OF INVENTION: NOVEL THERMOPHILIC POLYMERASE III HOLOENZYME
FILE REFREENCE: 1794.0030004

CURRENT APPLICATION NUMBER: US/09/818,780

CURRENT FILING DATE: 2001-03-28

PRIOR APPLICATION UNMER: US 60/192,736

PRIOR FILING DATE: 2000-03-28

NUMBER OF SEQ ID NOS: 98

SOFTWARE: PATENTIN OF SEQ ID NOS: 98

SOFTWARE: PATENTIN OF SEQ ID NOS: 98

SEQ ID NO 75

LENGTH: 2127
                                                                                                                                                                                                                                                                                                                                                                   157 LeuLeuLeuThrGluLeuPheLeuProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2127
59
22
77
94
                                                                                                                                                                                                    195
4 4 4 6
0 0 0
                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                            US-10-718-311-16 (1-170) x US-09-543-681A-3086 (1-195)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-10-718-311-16 (1-170) x US-09-818-780-75 (1-2127)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ProAlaLeuThrGlnLeuArgAla----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ORGANISM: Thermus thermophilus
                                                                                                                                                                                                      3.25e-06
121.00
82.4%
70.6%
                                                                                                                                        TYPE: DNA
CRGANISM: Proteus mirabilis
US-09-543-681A-3086
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0.875
90.00
32.1%
23.4%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                23 IleProAlaLeuAsp-
                                                                                                                                                                                                                                        Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                              Percent Similarity:
                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                               -09-818-780-75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: Th
US-09-818-780-75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                      요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
```

```
1327 TTGCCCCTGCGGTACCACCGGGAGGGGAAGGGGGCGCTCGTCTGCCACCACAGTGCGGCCAC 1386
                                                                                                                                                                                                                                                                                                                                                                 :::
1267 TACAGCGCCCTCCTCTCTGCCAGACTGCGGCTTCCGGCCCATGTGCCCCGGACTGCGCC 1326
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1567 erececercercercercas de descrireces de concecerce de 1626
86 LeuCysAlaAspGlyGlu------ProTrpLeuAlaGlyArgThrValValPro 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               119 ProLeuGlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGly 138
                                                                                                                                                                                                                                     99
                                                                                                                                                                                                                                                                                                                                 96
                                                                                                                                                                                                                                     ---ValGluGlnAsnGluIle
                                                                                                                                                                                                                                                                                                                                   67 ProGluGluLeuProLeuLeu------ProLysGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ValSerThr------LeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThr
                                            MetThrLysArgPheGluGlnGlnGlyLysThrValSerValThrMetIleArgGluGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             139 ArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1735 GTCCTCCAGACCTTCACCCCCGAGCACCCCGTGCAC 1770
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        159 LeuThrGluLeuPheLeuProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                               77 SerArgTyr---TrpLeuArgGluIleLeu---
```

٠,

OM protein

Run on:

Sequence:

Searched:

```
Sequence 33, Appl
Sequence 3, Appl
Sequence 3, Appl
Sequence 12, Appl
Sequence 12, Appl
Sequence 29, Appl
Sequence 24, Appl
Sequence 24, Appl
Sequence 21, Appl
Sequence 113, App
Sequence 75, Appl
Sequence 77, Appl
Sequence 77, Appl
Sequence 127, Appl
Sequence 115, Appl
Sequence 1067, Appl
Sequence 1067, Appl
Sequence 1067, Appl
Sequence 1067, Appl
Sequence 1067, Appl
Sequence 1067, Appl
Sequence 1067, Appl
Sequence 1069, Appl
Sequence 2063, Appl
Sequence 2063, Appl
Sequence 2721, Appl
Sequence 2721, Appl
Sequence 2721, Appl
Sequence 2721, Appl
Sequence 2721, Appl
Sequence 2721, Appl
Sequence 2721, Appl
Sequence 33285, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 772942,
Sequence 772942,
Sequence 22, Appl
Sequence 19, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 39118,
Sequence 4, App
Sequence 18275
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                , OTHER INFORMATION: Description of Artificial Sequence: synthetic CPL US-09-855-341-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: MEYER, KNUT
APPLICANT: VAN DYK, DREW
TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID
FILLE REFERENCE: BC1015 US NA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            684
US-10-672-396-4

5 US-11-11-086-9

5 US-11-11-086-9

105-09-925-065A-772942

US-09-928-105-22

US-09-928-175-19

US-09-928-175-19

US-09-928-175-19
                                                                                                                                                                                                                                                                                                                                                                 2 16 US-110-915-740A-1068
2 16 US-11-183-136-15
3 US-10-330-773-25
4 US-10-30-773-25
5 US-10-467-657-2855
7 US-10-467-657-2855
10 US-10-467-657-285
10 US-10-487-20-1721
10 US-10-487-20-1721
7 US-10-487-20-1721
7 US-10-487-20-1721
10 US-10-47-67-20-185-33285
10 US-10-750-185-33285
11 US-10-770-623-33285
                                                                                                                                                                                                                                                                                                                                                                 US-10-915-740A-1068
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CURRENT APPLICATION NUMBER: US/09/855,341
CURRENT FILING DATE: 2001-05-15
NUMBER OF SEQ ID NOS: 16
SEQ ID NO 7
LENGTH: 684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 1
US-09-855-341-7
Sequence 7, Application US/09855341
Fatent No. US20020002715A1
GENERAL INFORMATION:
APPLICANT: VIITANEN, PAUL V.
                                                                                                                                                                                                                                                                                                                                     10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: DNA ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9.84e-106
                                                                                                                                                                                                                                                                                                                                                               2242716
                                                                                                                                                                                          498
1971
1207
269223
                                                                                                                                                                                                                                                                                                                                                                                  2892
                                                        Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                88.5
88
                                                                                                                                                                                                                                                                                                                                                                                                                                                           85.5
84.5
84.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Published Applications NA Main:*

1: /BMC Celerra_SIDS3/ptodata/2/pubpna/US07_PUBCOMB.seq:*
2: /BMC Celerra_SIDS3/ptodata/2/pubpna/US08_PUBCOMB.seq:*
3: /BMC Celerra_SIDS3/ptodata/2/pubpna/US08_PUBCOMB.seq:*
4: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US08_PUBCOMB.seq:*
5: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US08_PUBCOMB.seq:*
6: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US108_PUBCOMB.seq:*
7: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US108_PUBCOMB.seq:*
8: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US108_PUBCOMB.seq:*
9: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US108_PUBCOMB.seq:*
11: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US106_PUBCOMB.seq:*
12: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US106_PUBCOMB.seq:*
13: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US106_PUBCOMB.seq:*
14: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US106_PUBCOMB.seq:*
13: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US11A_PUBCOMB.seq:*
14: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US11A_PUBCOMB.seq:*
15: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US11A_PUBCOMB.seq:*
16: /BMC_Celerra_SIDS3/ptodata/2/pubpna/US11C_PUBCOMB.seq:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -MODEL=frame+ p2n.model -DEV=xlh
-Q=/abss/ABSSWEB_spool/US10718311/runat_26052006_164933_13735/app_query.fasta_1
-D3=/ublished_Applications_NA_Main -QFMT=fastap_SUFFIX=rnpbm -MINWATCH=0.1
-LOOPCL=0 -LOOPEXT=0 -UNITS=bIts_START=1 -END=-1 -MATRIX=blosum62
-TRANS=human40.cdi -LIST=45 -DOCALIGN=200 -THR_SCORE=pct -THR_MAx=100
-THR_MIN=0 -ALIGN=15 -MODE=LOCAL -OUTFMT=pto -NORM=ext -HEAPSIZE=500 -MINLEN=0-MAXLEN=200000000 -HOST=abss05h
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 7, Appli
                                                                                                                                   (without alignments)
2677.596 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                         1 MQVWHMSHPALTQLRALRYC.....RLSGKPLLLTELFLPASPLY 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Description
                                                                                                             May 30, 2006, 03:03:17 ; Search time 1170.21 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                      37784340
   GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd.
                                                                          - nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                                                                                                                                                                                                  Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                              18892170 segs, 6143817638 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           684 3 US-09-855-341-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Listing first 45 summaries
                                                                                                                                                                                                                                                             BLOSUM62
Xgapop 10.0 , Xgapext
Ygapop 10.0 , Ygapext
Fgapop 6.0 , Fgapext
Delop 6.0 , Delext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Post-processing: Minimum Match 0% Maximum Match 100%
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                    US-10-718-311-16
887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query
Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Command line parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         887 100.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score
                                                                                                                                                                                    Title:
Perfect score:
                                                                                                                                                                                                                                                                 Scoring table:
```

Database

٠ 8 Result

	FRIOR APPLICATION NUMBER: 60/355,511
### Security 887,00 Conservative 170 ### Parcent Stallarity 100.00 Conservative 0 ### Description 100.00 Conservative 0 ### Description 100.00 Index 0 ### Description 100.00 Ind	CURRENT APPLICATION NUMBER: US/09/896, 866B CURRENT FILING DATE: 2001-06-29 PRIOR APPLICATION NUMBER: 60/216, 615 PRIOR PILING DATE: 2000-07-07 PRIOR FILING DATE: 2000-07-07 NUMBER OF SEQ ID NOS: 19 SOFTWARE: Microsoft Office 97 SEQ ID NO 16 TYPE: DNA ORGANISM: Artificial Sequence PRIOR FILING DATE: Cature OTHER INFORMATION: open reading frame of the chloroplast-targeted CPL fusion protein US-09-896-866B-16 Alignment Scores: 9.84e-106 Length: 684 Score: 887.00 Matches: 170

us-10-718-311-16.rnpbm

Percent Similarity: 100.04 Mismatches: 0 Destructive: 0 Destructive: 100.04 Indets: 0 Destructive: 100.04 Indets: 0 Destructive: 100.04 Indets: 0 Destructive: 100.04 Indets: 0 Destructive: 100.04 Indets: 0 Destructive: 100.04 Indets: 0 Destructive: 100.04 Indets: 0 Destructive: 100.04 Destru	RESULT 5 US-10-718-311-7 Sequence 7, Application US/10718311 Sequence 7, Application US/10718311 Sequence 7, Application No. US20040143867A1 Sequence 7, Application No. US20040143867A1 Sequence 7, Application No. US20040143867A1 Sequence 7, APPLICANT: VITANEN, PAUL V. APPLICANT: VITANEN, PAUL V. APPLICANT: VAN DYK, DREW TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID TITLE OF INVENTION: UNMBER: US/10/855,341 PRIOR FILING DATE: 2001-05-15 NUMBER OF SEQ ID NOS: 16 SOFTWARE: MICROSOFT OFFICE 97 SEQ ID NO 7 LENGTH: 684 TYPE: DNA ORGANISM: Artificial Sequence FRACTHRE: COTHER INFORMATION: Description of Artificial Sequence:synthetic CPL US-10-718-311-7 Alignment Scores: PARCHES: CORRESTOR OF THE INFORMATION: Description of Artificial Sequence: Pred. No.: PEATOR Similarity: 100.0% Matches: 0 Percent Similarity: 100.0% Mismatches: 0 Percent Similarity: 100.0% Mismatches: 0	. LOCOL MESINGLOIGE:
Best Local Similarity: 100.04 Mismatches: 0 Ducry Match: 100.04 Indels: 0 Caps: 0 Ca	US-10-699-050-16 Sequence 16, Application US/1069050 Sequence 16, Application US/1069050 Sequence 16, Application No. US20040142437A1 Septimary 10	

Db 172 ATGCAGGGGCATATGTCACCCCGGCTTAACGCACTGCGGCGCTGCGCTATGT 231 Qy 21 LysGJulleProalaLewapProGlnLewLewApTrpLewLewGgluAsgSerWet 40 Db 232 AAAAGGATCCCTGCCTGCAACTGCTCGACTGCGTGGGGATTCCATG 291 Qy 1 ThrLysacpphedludinGlyLysThrValSerValThrMetllaAgGluGlyPhe 60 Db 292 ACAAACGTTTTGAACAGCAACAGCAACTGCTGCGCGAAGGGTTT 351 Qy 61 ValGJudlnAnGlulleProGluLewProLewBroLewBroLysGluSerArtTyTTP 80 B1 LewargGlulleLewLewCysAlaaapGlyGluProTrpLewAlaGTACTGCGCAAGGGTTT 351 Qy 81 LewargGlulleLewLewCysAlaaapGlyGluProTrpLewAlaGlyArgThrValVal 100 Db 312 TACGTGAAATTTGTTATGTGCGAACGCGCGTGGCGCGCAACGCTTGCCGCTAACTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGC	publication US/10462162 Sequence 47, Application US/10462162 Sequence 47, Application US/10462162 GRNEAL INCORMATION: APPLICANT: B.1. duPont de Nemours and Company, Inc. APPLICANT: B.1. duPont de Nemours and Company, Inc. APPLICANT: Wilst Dennis APPLICANT: Wilst Dennis TITLE OF INVERTION: High Level Production of Arbutin in Green Plants and Microbes TITLE OF INVERTION: High Level Production of Arbutin in Green Plants and Microbes TITLE OF INVERTION: High Level Production of Arbutin in Green Plants and Microbes TITLE OF INVERTION: High Level Production of Arbutin in Green Plants and Microbes TITLE OF INVERTION: High Level Production of Arbutin in Green Plants and Microbes TITLE OF INVERTION: High Level Production of Arbutin in Green Plants and Microbes SOCHWARE: Microsoft Office 97 SOCHWARE: Microsoft Office 97 SEQ ID NO 47 PRATURE TYPE: DA
ery Match: -10-718-311- 172 212 212 2132 411 292 61 61 101 121 532 1412 101 141	Oy 161 GluLeuPheLeuProAlaSerProLeuTy 170 Bb 652 GAACTGTTTTTACCGGGTCACCGTTGTAC 681 RESULT 6 US-10-42-162-13 1 Sequence 33. Application US/10462162 1 Publication No. US20040261147A1 1 SERRAL INFORMATION 1 APPLICANT: Meyer: Knut 1 APPLICANT: Meyer: Knut 2 APPLICANT: Mittanen, Paul 3 APPLICANT: Pilnt, Dannia 3 TITLE OF INVENTION: High Level Production of Arbutin in Green Plants and Microbes 3 TITLE OF INVENTION: High Level 4 APPLICANT: Filnt, Dannia 5 TILE REFERENCE: CL 2152 US NA 5 CURRENT PILNTON NUMBER: US/10/462,162 5 CURRENT PILNTO BATE: 2003-06-16 5 CURRENT PILNTO BATE: 2003-06-16 5 SOFTWARE: Microsoft Office 97 5 SOFTWARE: Microsoft Office 97 5 SOFTWARE: WAS 6 SOFTWARE: WAS 6 SOFTWARE: WAS 7 SOFTWARE: WAS 6 SOFTWARE: WAS 6 SOFTWARE: WAS 7 SOFTWARE: WAS 6 SOFTWARE: WAS 6 SOFTWARE: WAS 6 SOFTWARE: WAS 6 SOFTWARE: WAS 7 SOFTWARE: WAS 6 SOFTWARE: WAS 7 SOFTWARE: WAS 6 SOFTWARE: WAS 7 SOFTWARE: WAS 8 SOFTWARE: WAS 8 SOFTWARE: WAS 8 SOFTWARE: WAS 8 SOFTWARE:

S

300

360

```
GENERAL INFOCULATE: Plint, Dennis
APPLICANT: Plint, Dennis
APPLICANT: Plint, Dennis
APPLICANT: Meyer, Knut
APPLICANT: Wittenen, Paul
TITLE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugate
TITLE OF INVENTION: Sinapoylglucose:Malate Sinapoyltransferase Form Malate Conjugate
TITLE OF INVENTION: Benzoic Acid Glucosides
FILE REFERENCE: BC1034 US NA
CURRENT APPLICATION NUMBER: 509/896,866B
CURRENT FILING DATE: 2000-07-29
PRIOR APPLICATION NUMBER: 60/216,615
PRIOR APPLICATION NUMBER: 60/216,615
NUMBER OF SEQ ID NOS: 19
SOFTWARE: Microsoft Office 97
SEQ ID NO 12
LENGTH: 495
                                                                                                                                                                                                            ThrSerSerThrLeuThrArgAspPheIleGluIleGluArgAspAlaGlyLeuTrpGly 145
                                                                                                      86 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CIGGATCCGCAACTGCTCGACTGGTGCTGGAGGATTCCATGACAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LeukapproGlnLeuLeukapTrpLeuLeuLeuGlukapSerMetThrLygkrgPheGlu 45
                 106 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                              301 AGCGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                    361 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLygGluIleProAla
    GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 ATGTCACACCCGGGTTAACGCAACTGCGTGCGCTGCGCGCTATTGTAAAGAGATCCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   495
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-718-311-16 (1-170) x US-09-896-866B-12 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                           ; Sequence 12, Application US/09896866B; Patent No. US20020151002A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.35e-101
854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                                ; TYPE: DNA; ORGANISM: Escherichia coli
US-09-896-8668-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                    RESULT 9
US-09-896-866B-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Alignment Scores:
                                                                                                                                                                                                            126
    46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    . No. :
                     유
                                                                      엄
                                                                                                                           엄
                                                                                                                                                                             셤
                                                  8
                                                                                                ò
                                                                                                                                                          ઠે
                                                                                                                                                                                                         ò
                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ℅
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                               240
                                                                                                                                                          104
                                                                                                                                                                                 300
                                                                                                                                                                                                                       180
                                                                                                                                                                                                         105 LeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeu 124
                                                                                                                                                                                                                                                           PheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrp 144
                                                                                                                                                                                                                                                                         145 GlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeu 164
                                                                                                                                                                                                                                                                                                                              84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9
                                                                                                                                                      61 GCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTT
                                                GluIleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIle
                                                                                                                 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 Argreachecececritalescalescalescalesceratestalaaaaaaareeereee
                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 8

US-09-655-341-3

Sequence 3, Application US/09855341

Fatent No. US2002002715A1

GENERAL INFORMATION:

APPLICANT: VITANEN, PAUL V.

APPLICANT: VAN DYK, DREW

TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID

TITLE OF INVENTION: HIGH LEVEL PRODUCTION OF P-HYDROXYBENZOIC ACID

TITLE OF INVENTION: HOWBER: US/09/855,341

CURRENT FILING DATE: 2001-05-15

NUMBER OF SEQ ID NOS: 16

SOFTWARE: MICROSOFT OFFICE 97

LENGTH: 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     495
1165
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; OTHER INFORMATION: Description of Unknown Organism:E. US-09-855-341-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-718-311-16 (1-170) x US-09-855-341-3 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps:
                                                                                                                                                                                                                                                                                                                                                                165 ProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                 481 CCGGCGTCACCGTTGTAC 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1.35e-101
854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: DNA
ORGANISM: Unknown Organism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                           125
                                                                                                     65
25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         26
                                                                                                                                                                                                                                                                                                                                         421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match:
DB:
                                                                                                                                                                       셤
                  셤
                                                ઠે
                                                                 8
                                                                                             6 B 6
                                                                                                                                                                                                        8 8 8
                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                    엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
```

240 105 300 125 360 145

420

```
APPLICANT: Flint, Dennis
APPLICANT: Meyer, Knut
APPLICANT: Meyer, Knut
APPLICANT: Wittanen, Paul
TITLE OF INVENTION: Sinapoylglucose: Malate Sinapoyltransferase Form Malate Conjugates
TITLE OF INVENTION: Sinapoylglucose: Malate Sinapoyltransferase Form Malate Conjugates
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Benzoic Acid Glucosides
TITLE OF INVENTION: Benzoic Acid Glucosides
CURRENT PRILING DATE: 2003-10-30
PRIOR PRILING DATE: 2001-06-29
PRIOR FILING DATE: 2000-07-07
PRIOR FILING DATE: 2000-07-07
NUMBER OF SEQ ID NOS: 19
SOFTWARE: Microsoft Office 97
SEQ ID NO 12
                                                                                                                                                                                                  LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            495
00
00
00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-718-311-16 (1-170) x US-10-699-050-12 (1-495)
                                                                                                                                                                                                                                                                                                                          ; Sequence 12, Application US/10699050; Publication No. US20040142437A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1.35e-101
854.00
100.0%
: 100.0%
                                                                                                                                                                                                                                                    ; TYPE: DNA
; ORGANISM: Escherichia coli
US-10-699-050-12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                  US-10-699-050-12
  99
                          181
                                                 86
                                                                          241
                                                                                                                                                   126
                                                                                                                                                                                                                                                      166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match:
DB:
                                                                  8 8 8 8
                                                                                                                                                                     g
                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                      음
                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                음
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
  8 6
                                         ⋧
                                                              LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValValProValSerThrLeu 105
                                                                                                              SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                   301 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC 360
                                                                                                                                                                ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly 145
                                                                                                                                                                                                                361 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 crogarccocaacrocrosacroscrorrocrosasoarrocaroaaaacorrrroaa 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      26 LeuAspProGlnLeuLeuAspTrpLeuLeuCluAspSerMetThrLysArgPheGlu 45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
               11eProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                     Sequence 37, Application US/10359369
Publication No. US2003021592741
GENERAL INFORMATION:
APPLICANT: Wiltanen, Paul
APPLICANT: Wiltanen, Paul
APPLICANT: Wiltanen, Paul
APPLICANT: Wiltanen, Paul
APPLICANT: Wiltanen, Paul
APPLICANT: Wiltanen, Paul
APPLICANT: Wiltanen, Paul
APPLICANT: Wiltanen, Paul
APPLICANT: Wiltanen, Paul
APPLICANT: Wiltanen, Paul
APPLICANT: Wiltanen, Paul
APPLICANT: Wiltanen, Daw
TITLE OF INVENTION: UDP-Glucosyltransferases
FILE REFERENCE: CL1821 US. NA
CURRENT APPLICATION NUMBER: 60/355,511
PRIOR APPLICATION NUMBER: 60/355,511
PRIOR FILING DATE: 2002-02-07
NUMBER OF SEQ ID NOS: 46
SOTUMER: Microsoft Office 97
SEQ ID NO 37
LENGTH: 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          495
1165
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-718-311-16 (1-170) x US-10-359-369-37 (1-495)
                                                                                                                                                                                                                                                                 166 AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                35e-101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
ORGANISM: Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ) NAME/KEY: CDS
; LOCATION: (1)..(495)
US-10-359-369-37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                               US-10-359-369-37
                                                                                                                                                                 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                106
                                                               98
                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              硆
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ે
                               8 6 8 6 8
                                                                                                                                                       र्व क्षे
                                                                                                                                                                                                                                                            중 음
```

25 9

360 145

480

300

```
Arbutin in Green Plants and Microbes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 CTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro
                                                                                                                     ThrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                                                                   421 CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTTACCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LeuAspProGlnLeuLeuAspTrpLeuLeuCluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TTATGTGCCGATGAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTGTGTCAACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181 ATCCCCGAAGAACTGCCGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SerGlyProGluLeuAlaLeuGlnLyBleuGlyLyBlherTroLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 ATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGTGGCGCTATTGTAAAGAGATCCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            498
1165
0
0
0
                                                                                                                                                                                                                                                                                                                          Sequence 29, Application US/10462162
Publication No. US20040261147A1
GENERAL INFORMATION:
APPLICANT: B.I. duPont de Nemours and Company, Inc.
APPLICANT: Meyer, Knut
APPLICANT: Wittanen, Paul
APPLICANT: Viitanen, Paul
APPLICANT: Flint, Dennis
TITLE OF INVENTION: High Level Production of Arbutin is
FILE REPERENCE: CL 2155 US NA
CURRENT APPLICATION NUMBER: US/10/462,162
CURRENT FILING DATE: 2003-06-16
NUMBER OF SEQ ID NOS: 54
SOFTWARE: Microsoft Office 97
SEQ ID NO 29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-718-311-16 (1-170) x US-10-462-162-29 (1-498)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
Matches:
                                                                                                                                                                                                                                   166 AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                 481 GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .36e-101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       854.00
100.0%
100.0%
96.3%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: DNA ORGANISM: Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                RESULT 13
US-10-462-162-29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH: 498
                                                                                                                                                                             146
    98
                                                                                                                   126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            No.:
                                                                                                                                                                                                    g
                         g
                                                             8
                                                                                Op
                                                                                                            ò
                                                                                                                                            ద
                                                                                                                                                                             ò
                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      8
                                                                                        125
                                                                                                                   360
                                                                                                                                                145
                                                                                                                                                                            420
                                                                                                                                                                                                                                    480
ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CTGGATCCGCAACTGCTCGACTGGTTGCTGGAGGATTCCATGACAAACGTTTTGAA 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       26 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu 45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           lleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu 85
                           ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGluLeuPheLeuPro
                                                                                                    126 ThrSerSerThrLeuThrArgAspPheIleGlulleGlyArgAspAlaGlyLeuTrpGly
                                                                                                                                                             SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 ATGTCACCCCGCGTTAACGCAACTGCGTGCGCTGCGCTATTGTAAAGAGATCCCTGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                              Sequence 3, Application US/10718311
; Sequence 3, Application US/10718311
; Publication No. US20040143867A1
; GENERAL INFORMATION:
; APPLICANT: VITANEN, PAUL V.
; APPLICANT: VAN DYK, DREW
; TITLE OF INVENTION: IN GREEN PLANTS
; TITLE OF INVENTION: IN GREEN PLANTS
; TITLE OF INVENTION: IN GREEN PLANTS
; TITLE OF INVENTION: US ABA
; CURRENT APPLICATION NUMBER: US/10/718,311
; CURRENT APPLICATION NUMBER: US/09/855,341
; PRIOR FILING DATE: 2001-05-15
; NUMBER OF SEQ ID NOS: 16
; SOFTWARE: MICROSOFT OFFICE 97
; SEQ ID NO 3
; LENGTH: 495
; TENGTH: 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; OTHER INFORMATION: Description of Unknown Organism:E. coli
US-10-718-311-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              495
165
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-718-311-16 (1-170) x US-10-718-311-3 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1,35e-101
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                 AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                             481 GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
ORGANISM: Unknown Organism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                          RESULT 12
US-10-718-311-3
                                                                                   106
                                                                                                                                                                                                      146
 181
                                                                                                                                                                                                                                                                166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             99
                                                                                                                                                                   g
                                                                                                                                                                                                                                요
                                                                            ઠે
                                                                                                          ద
                                                                                                                                            ò
                                                                                                                                                                                                    à
                                                                                                                                                                                                                                                                                        셤
                            ð
                                                     ద
                                                                                                                                                                                                                                                                ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ð
```

240 105

85

45

```
NAME/KEY: SIMILAR; 10CATION: (925)
1.OCATION: (893)...(925)
2.OCHER INFORMATION: 81% homologous to Escherichia coli 4-hydroxybenzoate
3. OTHER INFORMATION: 8ynthetase, accession number X57434, Smith-Waterman Score=49.
US-10-450-763-26139
                                                           164
                                                                                      480
                         420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               86 -LeuCysAlaAspGlyGluProTrpLeuAla-GlyArgThrValValProValSerThrL 105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              euSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuP 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     85
              145 GlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeu
                                                                          26 LeuAspProGlnLeuLeuAspTrpLeuLeuCluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          46 GlnGlnGlyLygThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     66 11eProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGlu11eLeu
PheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                     APPLICATION THOSE AND POLYPEPTIDES
TILE REFERENCE: 790CTP3/US
CURRENT APPLICATION NUMBER: US/10/450,763
CURRENT FILING DATE: 2003-06-11
PRIOR PILING DATE: 2001-03-30
PRIOR PILING DATE: 2001-03-31
PRIOR PILING DATE: 2000-03-31
PRIOR FILING DATE: 2000-03-31
PRIOR FILING DATE: 2000-03-31
PRIOR FILING DATE: 2000-03-31
PRIOR FILING DATE: 2000-03-31
SPIOR FILING DATE: 2000-03-31
SPIOR FILING DATE: 2000-03-31
SPIOR FILING DATE: 2000-03-31
SPIOR FILING DATE: 2000-08-23
NUMBER OF SEQ ID NOS: 60736
SEQ ID NO 26139
LENGTH: 1207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1207
163
1
1
2
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-10-718-311-16 (1-170) x US-10-450-763-26139 (1-1207)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                          ; Sequence 26139, Application US/10450763; Publication No. US20050196754A1; GENERAL INFORMATION:
                                                                                                                      165 ProAlaSerProLeuTyr 170
                                                                                                                                         481 CCGGCGTCACCGTTGTAC 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2.05e-95
811.00
98.2%
97.6%
91.4%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: DNA ORGANISM: Homo sapiens FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                  RESULT 15
US-10-450-763-26139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alignment Scores:
 125
                            361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ð
 8 6
                                                    ò
                                                                                 g
                                                                                                                      ò
                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OTHER INFORMATION: Nucleic acid sequence of a nucleic acid fragment inserted into OTHER INFORMATION: expression vector pET29a encoding CPL (from Escherichia coli) a OTHER INFORMATION: pHBA 1-hydroxylase (from Cadida parapsilosis).
                                                                                                                                                                                                                                                                                                                                                     Arbutin in Green Plants and Microbes
                                                                                         240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeu 124
                               ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 145
                                                            361 ACATCATCGACATTAACCCGGGACTTTATTGAGATAGGCCGTGATGCCGGGCTGTGGGGG 420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LeuleuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThr 104
 AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC 360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  25 AlaLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPhe 44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61 GCCCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAACGTTTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GlulleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGlulle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        181 GAAATCCCCGAAGAACTGCCGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          HisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIlePro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1971
165
0
1
0
0
                                                                                                                                                                                                                                        Sequence 54, Application US/10462162
Publication No. US20040261147A1
GENERAL INFORMATION:
APPLICANT: B.I. dubont de Nemours and Company, Inc.
APPLICANT: Meyer, Knut
APPLICANT: Vitanen, Paul
APPLICANT: Vitanen, Paul
APPLICANT: Vitanen, Paul
APPLICANT: Vitanen, Paul
CURRENT Flint, Dennis
TITLE OF INVENTION: High Level Production of Arbutin in
CURRENT APPLICATION NUMBER: US/10/462,162
CURRENT FLING DATE: 2003-06-16
NUMBER OF SEQ ID NOS: 54
SOFTWARE: Microsoft Office 97
SEQ ID NO 54
LENGTH: 1971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            US-10-718-311-16 (1-170) x US-10-462-162-54 (1-1971)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2.27e-100
851.00
99.4%
99.4%
95.9%
                                                                                                                                                                       481 GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TYPE: DNA ORGANISM: artificial sequence
                                                                                                                                                     AlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                 RESULT 14
US-10-462-162-54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; OTHER INFORM
US-10-462-162-54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ß
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   105
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        82
                               126
                                                                                                                                                     991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              임
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                엄
                                                    용
                                                                                 ò
                                                                                                              셤
                                                                                                                                            જે
                                                                                                                                                                          셤
                               ઠે
```

Search completed: May 30, 2006, 03:41:56 Job time : 1175.21 secs

THIS PAGE BLANK (USPTO)

Appli), App Appli

1803, Ap 24, Appl 77335, A

1, Appli 173132, 166866, 33008, A 3713, Ap 76752, A 78541, A 20553, A

37006, A 22504, A 1, Appli

75461, A 51, Appl 29, Appl 76569, A

Appl

Title: Perfect score:

Sequence:

OM protein

Run on:

Scoring table:

Minimum DB Maximum DB

Searched:

```
Sequence 1696, Ap
Sequence 191165,
Sequence 76487, A
GENERAL INFORMATI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 68, Appl
Sequence 75461, A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3 ValTrpHisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGlu
                                                                                                             Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                 Sequence Sequence Sequence
                                                                                                                                                                                                                                                                                                            Sequence 3
                                                                                                                                                                                                                                                                                                                                                    Sequence 1
Sequence 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence Sequence Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence 2
Sequence 1
Sequence 2
                                               Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2907
50
21
67
38
10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |||||||
484 GTCTGGCCCCTACCCATCCCAGCCTG-----
US-11-293-697-1629

US-10-224-433-1

US-11-293-697-200

US-10-293-697-336

US-10-953-349-4803

US-10-953-349-4803

US-10-953-349-4803

US-11-217-529-77335

US-11-217-529-10165

US-11-217-529-10165

US-11-217-529-10165

US-11-217-529-101686

US-11-217-529-106866

US-11-217-529-106866

US-11-217-529-106866

US-11-217-529-106866

US-11-217-529-106866

US-11-217-529-106866

US-11-217-529-106866

US-11-217-529-106866

US-11-217-529-106866

US-10-953-349-20563

US-10-953-349-20563

US-10-953-349-20563

US-10-953-349-20563

US-10-953-349-20563

US-10-953-349-20563

US-10-953-349-20563

US-10-953-349-20563

US-10-953-349-20563

US-10-953-349-20563

US-10-953-349-20563

US-11-226-605-51

US-11-226-605-51

US-11-226-605-51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-718-311-16 (1-170) x US-11-293-697-1067 (1-2907)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-29.
US-11-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALIGNMENTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indel8:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1.37
85.50
40.3%
28.4%
1614
1738
128361
987
1422
3075
3157
3252
3985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; ORGANISM: Homo sapiens
US-11-293-697-1067
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                              Score:
Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alignment Scores:
  73
71.5
71.5
71.5
70.5
70.5
70.5
                                                                                                                                                                                                                                       69.5
69.5
69.5
                                                                                                                                                                                                                                                                                                                           DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE:
    요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Command line parameters:

-MODEL=Krame+p2n.model -DEV=xlh
-Q=\text{AbsS/WEB} = \text{pool} \text{101010311/runat} \text{26052006} \text{164936} \text{13807/app} \text{query}. \text{fasta} - 1 \text{-MODEL=Krame+p2n.model} \text{-DEV=xlh} \text{-MODEL-CO-LOOPEL-B-ID-MONTATCH=0.1} \text{-DB=Published Applications NA New -OFMT=fastap -SUPFIX=rmpbn -MINMATCH=0.1} \text{-LOOPEL-0} \text{-LOOPEL-0} \text{-LOOPEL-0} \text{-LOOPEL-0} \text{-LOOPEL-0} \text{-LOOPEL-0} \text{-LOOPEL-0} \text{-ITR MAX=100} \text{-MODE-LOCAL -OUTFMT=pto -NORM=ext -HEAPSIZE=500 -MINLEN=0 -ALIGN=15 -MODE-LOCAL -OUTFMT=pto -NORM=ext -HEAPSIZE=500 -MINLEN=0 -AMXEN=2000000000 -HOST=abss03h -NORM=26052006 164936 13807 -NCPU=6 -ICPU=3 -NO MMAP -NGG SCORES=0 -MAIT -DSPBLOCK=100 -EONGLOG -DEV TIMEOUT=120 -WARN TIMEOUT=30 -THREADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPEXT=7 -XGAPEXT=7 -XGAPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 665, App
Sequence 509, App
Sequence 1348, Ap
Sequence 1930, Ap
Sequence 1066, Ap
Sequence 1066, Ap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 1067, Ap
Sequence 665, App
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 174332,
Sequence 34874, A
                                                                                                                                          May 30, 2006, 03:03:47; Search time 36.0299 Seconds (without alignments) 798.935 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Published Applications NA New:*

1. /ENC_Celerra_SIDS3/ptodata/1/pubpna/US09_NEW_PUB.seq:*
2. /ENC_Celerra_SIDS3/ptodata/1/pubpna/US06_NEW_PUB.seq:*
3. /ENC_Celerra_SIDS3/ptodata/1/pubpna/US08_NEW_PUB.seq:*
4. /ENC_Celerra_SIDS3/ptodata/1/pubpna/PCOB_NEW_PUB.seq:*
5. /ENC_Celerra_SIDS3/ptodata/1/pubpna/PCOB_NEW_PUB.seq:*
6. /ENC_Celerra_SIDS3/ptodata/1/pubpna/US10_NEW_PUB.seq:*
7. /ENC_Celerra_SIDS3/ptodata/1/pubpna/US10_NEW_PUB.seq:*
8. /ENC_Celerra_SIDS3/ptodata/1/pubpna/US10_NEW_PUB.seq:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                              MQVWHMSHPALTQLRALRYC......RLSGKPLLLTELFLPASPLY 170
                    GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd
                                                                                                 nucleic search, using frame plus p2n model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-11-293-697-1067
US-11-293-697-665
US-11-293-699-509
US-11-217-529-2348
US-10-488-619-1930
US-11-217-529-1938
US-11-293-697-1066
US-11-293-697-1066
US-11-217-529-104332
US-10-953-349-34874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Total number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                        242596 segs, 56442199 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                0.5
7.0
7.0
                                                                                                                                                                                                                                                                                                                                                , Xgapext
, Ygapext
, Fgapext
, Delext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             seq length: 0
seq length: 200000000
                                                                                                                                                                                                                            US-10-718-311-16
887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ~ 9
                                                                                                                                                                                                                                                                                                                                           Xgapop 10.0,
Ygapop 10.0,
Fgapop 6.0,
Delop 6.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2907
3023
3550
11104
1791
2384
489
                                                                                                                                                                                                                                                                                                                           BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0000000400
```

510

Score

ĕ.

Database :

85.5 80 76.5 75.5 75.5 74.5 73

c

N

```
GACAATGAACAAGGCTTG----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   21.9
76.50
41.1%
30.5%
8.6%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TYPE: DNA
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-11-293-697-509/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-11-293-697-509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                 778
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             339
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ..
No..
                                                                                    g
                                                                                                                                                                                                                                                                             g
                                          ò
                                                                                                                                        ò
                                                                                                                                                                                  셤
                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               염
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ∂
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ਨੇ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GGATTICAAGGIACCIGIGCGAACCCCAGCCCTCATTGAACTCAGIAGAAACCA 690
                                                                                                                                                                                                                                                                                                                                                          732
                                                                                                                                                                                                                                                                                                                                                                                                       ArgThrvalValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGly 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LysThrProLeuGly-Arg----TyrLeuPheThrSerSerThrLeuThrArgAspPh 134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 134 elleGlulle-----GlyArgAspAlaGlyLeuTrp-----GlyAr 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             841 AATAGAAGTGAAATATCCAAGGTCCCACTCCAGGGAAGCTGACCACTGGGTGGATGACTC 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ||| |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: |||::: ||::: |||::: ||::: |||::: |||::: |||::: ||::: |||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||:: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||::: ||:: ||::: ||::: ||::: ||::: ||::: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||:: ||
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              96
                                                                                                                                                                                                             GlyPhe-----ValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGlu 76
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GluGlnGln-----GlyLygThrValSer 52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             HisMetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIlePro 24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           25 AlaLeuAspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPhe 44
                                                    CCGCGTCACTGGATTTAGAAA-----TGTGACAGGGAT-----TTCAGAGGG
                   IleProAlaLeuAspProGlnLeuLeuAspTrp-----LeuLeuLeuGluAspSerMet
                                                                                                                                                                                                                                                                                                         SerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAATGGGTCCAGCCC-----TCACAACCCAGCACCACTCTGCAGGCATGGAAA
                                                                                                               ThrivsArgPheGluGlnGlnGlyLysThrValSerValThrMetIleArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGlu 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           901 ccccadcorccaaacccrcrcrddcagrccrrdcrdcrdcagaag 946
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3023
36
16
53
28
5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-718-311-16 (1-170) x US-11-293-697-665 (1-3023)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE OF INVENTION: Novel full length cDNA FILE REFERENCE: H1-A0106
CURRENT APPLICATION NUMBER: US/11/293,697
CURRENT FILING DATE: 2005-12-05
PRIOR APPLICATION NUMBER: US/10/108,260
PRIOR FILING DATE: 2002-03-28
NUMBER OF SEQ ID NOS: 5458
SOFTWARE: PATENTIN Ver: 2.1
SEQ ID NO 665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; Sequence 665, Application US/11293697; Publication No. US20060105376A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6.6
80.00
39.1$
27.1$
9.0$
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: DNA
ORGANISM: Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 2
US-11-293-697-665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; ORGANISM: Hom
US-11-293-697-665
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LENGTH: 3023
                                                                                                                 41
                                                                                                                                                                                                             59
                                                                                                                                                                                                                                                            631
                                                                                                                                                                                                                                                                                                         11
                                                                                                                                                                                                                                                                                                                                                          691
                                                                                                                                                                                                                                                                                                                                                                                                    97
                                                                                                                                                                                                                                                                                                                                                                                                                                                   733
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               781
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ŋ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ..
90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score:
                                                                                                                                                                                                                                                a
                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                         8 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                             g
                                                                                                            8 8
                                                                                                                                                                                            ठे
                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   g
```

```
108
                                                                                                                                                                                                       777
                                      616 CAGGCCACTCAGCCTGAGGCCATTCCTCAGGGGACTAACATCACTGAAGAAAACCTGGC 675
                                                                                                                       735
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGTGTG------GAGGGAAGCATCTCCCAGGATTCAGGGCGCCCGCTGACGAC 292
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      --LeuGlnLysLeuGlyLysThrProLeu 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -----LeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValPro--- 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          231 GTCAGGTTGACCTGC-----TGG------CCAACCTCAGTTTCTCCAAGG 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             121 GlyArgTyrLeuPhe-------ThrSerSerThrLeuThrArgAspPhe 134
                                                                                88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----Asn 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                132 AGGGGGTACAGACCCGAGGAAGGAGTTGGCTTCAGACAAAAAAGACAAGAAAAACCCGGGTG 73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGluGlnGlnGlyLysThrVal 51
                                                                                                          89 AspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSerGlyPro
                                                                                                                                                                                            53 ValThrMetIleArgGluGlyPheValGluGlnAsnGluIleProGluGluLeuPro---
                                                                             65 GlulleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ValSerThrLeuSerGlyProGluLeuAla------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 52 ServalThrMetIleArgGluGlyPheValGluGln------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3550
115
35
8
                                                                                                                                                                                                                                                  109 GluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGly 121
                                                                                                                                                                                                                                                                            Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-718-311-16 (1-170) x US-11-293-697-509 (1-3550)
                                                                                                                                                                                                                                                                                                                                                                     Sequence 509, Application US/11293697
Publication No. US20060105376A1
GENERAL INPORMATION:
TITLE OF INVENTION: Novel full length cDNA
FILE REFERENCE: H1-A0106
CURRENT APPLICATION NUMBER: US/11/293,697
CURRENT FILING DATE: 2005-12-05
PRIOR APPLICATION NUMBER: US/10/108,260
PRIOR PLING DATE: 2002-03-28
NUMBER OF SEQ ID NOS: 5458
SEQ ID NO 509
```

m

Page

```
RESULT 5

US-10-488-619-1930

US-10-488-619-1930

Sequence 1930, Application US/10488619

Publication No. US20060099578A1

GENERAL INFORMATION:

APPLICANT: GERENIE, Winner and Sullivan, P.C.

TITLE OF INVENTION: Human Mitochondrial DNA Polymorphisms, Haplogroups, Associations;

TITLE OF INVENTION: Physiological Conditions, And Genotyping Arrays

TITLE OF INVENTION NUMBER: US/10/488,619

CURRENT APPLICATION NUMBER: US/10/488,619

CURRENT FILING DATE: 2004-03-01

NUMBER OF SEQ ID NOS: 3040

SOUTH NUMBER OF SEQ ID NOS: 3040

SOUTH NUMBER OF SEQ ID NOS: 3040

SOUTH NUMBER OF SEQ ID NOS: 3040
                                                              -------AAGAAGATCTTCTGCACAGAA 1008
                          142 GlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuThrGlu 161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ||||||||::::::
|CAGGGAAGTCCACTTTC---ATCAATACCCTGAGGGGG-----GTGGGGGCATGAAGAA 483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          151 CGTTCCCTAAGAGGAAAGCCATCACAGAAGTGTTATTGCCACCAGATCAAGGTCACCACT 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       211 GCTGAGCTTCTACCATACAGAGCCATGGCTTGGGCCTCCAGCTTTGATGCATTCTTTAAG 270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     271 AATTTTAAAAGGGAAAGCAAAATCATCTCTGAATATGACATCACCTTGATTATGACT--- 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 379 ----CTGAGAGACATCGAGAGTGCTCCTGCACATAGCTGTGACAGGGGAAACAGGC--- 432
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        95 AlaGlyArgThrValValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLys 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            43 ArgPheGluGlnGlnGlyLysThrValSer-----ValThrMetileArgGluGly 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60 PheValGluGInAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyr 79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ------TyrCysLysGluIleProAlaLeuAsp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          28 ProGlnLeuLeuAsp------TrpLeuLeuLeuGluAspSerMetThrLys
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                328 TACATAGAGGAAAATAAGCTACAGAAAGCTGTTTCTGTAATTGAAAAGGTA----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       601
28
28
38
29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-718-311-16 (1-170) x US-10-488-619-1930 (1-601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 1938, Application US/11217529
Publication No. US20060095612A1
GENERAL INFORMATION:
APPLICANT: SUNTORY LIMITED
APPLICANT: NAKAO, YOSHIHIRO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   115 LeuGlyLysThrProLeuGly 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAAGGTGCAGCCCCCACTGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     15 ArgAlaLeuArg-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          75.50
47.2%
25.2%
8.5%
                                                                                                                            :::||||||
1009 GTCTTTTTG 1017
                                                                                                       162 LeuPheLeu 164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               musculus
                                                                ----- 886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-488-619-1930
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RESULT 6
US-11-217-529-1938
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TYPE: DNA
ORGANISM: Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 1930
LENGTH: 601
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ..
..
                                                              a
                                                                                                       8
                                                                                                                                          셤
                          ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ::::::|||
667 GITAACAIAACAGCAGAIGITITGGAGAGGGGAAAAATICAGGIAAGAGGTCAGGGTGGGGT 726
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              :::|||::::: ||||
727 ATAACTTTGGTGGGTGAATCCAAGCAGAAAGTTGGAGGTATTTTGGCCGAAGATATTGGT 786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          547 GTAGATAGACCCATAATTTCTTCAATCACCGGAGTAGGGTACTCTACAAGAGTAAGTCCG 606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     :::|||
607 TCACTCGTAAATAGAATGATCGACGTGCCAAAAAAGTATTGAAGGACCTCCAATGTGAG 666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GATGCAGGCTCTATACCCGAAGAACTTGGT-----GAAAAAGTTGCTTACCGTTTATTA 840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |||||::: :::|||
|-------GCTGTCGGTAGAAGTCAACTTCCA 885
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGly 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAla 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValPro 101
72 GGAAGATGGGCTTTCTCTGCGGGTAGGAATCACACACTTCGTCAACTGTGACAAAAGACAGA 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                64 -----AsnGlulleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeu 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            25 AlaLeuAspProGlnLeuLeuAspTrp--------LeuLeuLeuGlu 37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           38 AspSerMetThrLys-----ArgPheGluGlnGlnGlyLysThrVal-----Ser 52
                                                                                                                                                                       Sequence 2348, Application US/11217529
Publication No. US20060099612A1
GENERAL INFORMATION:
APPLICANT: SUNTON LIMITED
APPLICANT: NAKAO, YOSHIHIRO
APPLICANT: NAKAO, YOSHIHIRO
APPLICANT: NAKAO, YOSHIHIRO
APPLICANT: NAKAO, YOSHIHIRO
APPLICANT: NAKAO, YOSHIHIRO
APPLICANT: NAKAO, YOSHIHIRO
APPLICANT: ASHIKARI, TOSHIHIKO
APPLICANT: ASHIKARI, TOSHIHIKO
TILLE OF INVENTION: METHODS FOR ANALYZING GENES OF INDUSTRIAL YEASTS
FILE REPERENCE: S-38-285
CURRENT APPLICATION NUMBER: US/11/217,529
CURRENT APPLICATION NUMBER: US 10/932,182
PRIOR PILING DATE: 2004-09-02
NUMBER OF SEQ ID NOS: 197023
SOFTWARE: Patentin version 3.3
SEQ ID NO 2348
LIGHTH: 1104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIle---Pro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       53 ValThrMetIleArgGluGly-------PheValGluGln----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1104
42
28
63
50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-718-311-16 (1-170) x US-11-217-529-2348 (1-1104)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               , ORGANISM: Saccharomyces pastorianus US-11-217-529-2348
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          841 GAAGAATATCGAAAAGCGCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4.62
76.00
38.3$
23.0$
8.6$
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                            135 Ile 135
                                                                                                 ATT 10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           787
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               102
                                                            ò
                                                                                                 윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             쉽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
```

```
ORGANISM: Homo sapiens
   ) OKGANISH US-11-293-697-1066
                                                                   Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   요
                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                               ð
                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    154 GCATTGAGCAGGTATTC--------GACGGGAA---TGGAGG 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   187 GATGGCTCCGAGGACGGGATGGGAGGCCCACTGCCACAGCCACGCCCATTCCCACGCCC 246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SerGlyProGluLeuAlaLeuGlnLys-----LeuGlyLysThrProLeuGlyArgTyr 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                247 ATGGCAGAGGÁGTTGGCGTGGACTCCGCCCGTGTTGGGTCCCAGGCCTCTATCA----- 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   301 ---TrinchGergerarrecegnarchGercarrecengegaerrecerchearrir 357
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       135 IleGluije-----GlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArg 151
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LysGluSexArgTyrTrpLeuArgGlulleLeuLeuCysAlaAspGlyGluProTrpLeu 94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ----LeuLeuPro
        APPLICANT: KODAMA, YUKIKO
APPLICANT: KODAMA, YUKIKO
APPLICANT: PUJIMURA, TOMOKO
APPLICANT: PASHIKARI, TOSHIHHIKO
TILE OF INVENTION: METHODS FOR ANALYZING GENES OF INDUSTRIAL YEASTS
FILE REFERENCE: 5-38-28
CURRENT APPLICATION NUMBER: US/11/217,529
CURRENT FILING DATE: 2005-09-02
PRIOR APPLICATION NUMBER: US 10/932,182
PRIOR FILING DATE: 2004-09-02
NUMBER OF SEQ ID NOS: 197023
SOFTWARE: PATENTIN VERSION 3.3
SEQ ID NO 1938
LENGTH: 1791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 152 LeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       418 TACAACGGIAACCCTTTCTTTTTTTTGCTGCTGATCCCG 459
                                                                                                                                                                                                                                                                                                              1791
36
10
41
47
                                                                                                                                                                                                                                                                                                              Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-718-311-16 (1-170) x US-11-217-529-1938 (1-1791)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 1066, Application US/11293697
Publication No. US20060105376A1
GENERAL INFORMATION:
APPLICANT: HELIX RESEARCH INSTITUTE
TITLE OF INVENTION: Novel full length cDNA
FILE REPERENCE: H1-A0106
CURRENT APPLICATION NUMBER: US/11/293,697
CURRENT APPLICATION NUMBER: US/10/108,260
FRIOR FILING DATE: 2005-12-05
FRIOR FILING DATE: 2005-12-05
FRIOR FILING DATE: 2005-12-05
FRIOR FILING SEQ ID NOS: 5468
SOFTWARE: PatentIN Ver. 2.1
SEQ ID NO 1066
TYPE: DNA
                                                                                                                                                                                                                                ; TYPE: DNA; CRGANISM: Saccharomyces pastorianus US-11-217-529-1938
 NAKAMURA, NORIHISA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ProGluGluLeuPro----
                                                                                                                                                                                                                                                                                                                10.7
75.50
34.3$
26.9$
8.5$
                                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 7
US-11-293-697-1066
                                                                                                                                                                                                                                                                                                Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 106
                                                                                                                                                                                                                                                                                                                               Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δ
```

```
89 pGlyGluProTrpLeuAlaGlyArgThrValValPro---ValSerThrLeuSerGlyPr 108
                                                                                                                                                                                                                                                                                                91 CTGTTGAGGAACCATGGTTGGCAGTTAGAACCAGCATTGAGCCGATATTTCGATGGAGG 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          84 IleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSer 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     104 ThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyr 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               83
                                                                                                                                                                                              70 LeuProleu-LeuProlysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAs 89
                                                                                                                                                                                                                                                                                                                                                                                  ||||::|||
|31 GGAGGTGGCGCCCAGGCTCTGAGCTACCCTAGGTCTGCAGACTAGCGGGCATTGGCCA 188
                                                                                                                                                                                                                                                                                                                                                         Sequence 17432, Application US/11217529
Publication No. US20060099612A1
GENERAL INFORMATION:
APPLICANT: SUNTORY LINTED
APPLICANT: NAKAMURA, VOSHTHIRO
APPLICANT: NAKAMURA, VOSHTHIRO
APPLICANT: ROJAMBA, YUKIKO
APPLICANT: RUJIMBA, TOOMOKO
APPLICANT: RUJIMBA, 100000
APPLICANT: RUJIMBARI: US/11/217,529
CURRENT RILING DATE: 2005-09-02
PRIOR APPLICATION NUMBER: US/10/932,182
PRIOR APPLICANTION NUMBER: US/19023
SOFTWARE: PALENTIN GDATE: 2004-09-02
NUMBER OF SEQ ID NOS: 197023
SOFTWARE: PALENTIN VERSION 3.3
                                                                                                                                                                                                                   31 TTAAATGAGTTCCAGGTCATCACGAATTTCCCCCCAGAAGACTTGCCAGAAGAATGTGGTGAGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               56 IleArgGluGlyPheValGluGlnAsnGluIleProGluGluLeuPro---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               489
7 39
32
6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-718-311-16 (1-170) x US-11-217-529-174332 (1-489)
              Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                      US-10-718-311-16 (1-170) x US-11-293-697-1066 (1-2384)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TYPE: DNA ORGANISM: Saccharomyces pastorianus
                21.3
74.50
48.3%
41.7%
8.4%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3.25
73.00
34.3%
29.1%
8.2%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
                                                      Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-11-217-529-174332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-11-217-529-174332
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQ ID NO 174332
LENGTH: 489
Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match:
DB:
                                                                                              Query Match:
DB:
```

വ

```
1839 ------ATAAGAAAGGGTGAGTGCAAGCAAGGAGGCCTCCTGCTAAGAGGCTG 1792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1791 AGGICCCCTCTGGIICCAAGGAIGGGAIGTCAGCCTIGACCTICCGGGGGICTGCAGIGGC 1732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1572 AAGCGTCCTCCACTCTGTCCTCAGGACTCAGCTGTGTGGCCTTGGATTTCTTTTTGCGGG 1513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          106 rGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrPro-LeuGlyArgTyrLeuPheT 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       87 CysAlaAspGly-GluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSe 106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                126 hrSerSerThrLeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGlyA 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 MetGlnValTrpHisMetSerHisPro-------AlaLeuThrGlnLeu 14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               68 GluGluLeuProLeuProLysGluSerArgTyrTrp---LeuArgGluIleLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           15 ArgAlaLeuArgTyrCysLysGluIleProAla-----LeuAspProGlnLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                32 AspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGluGlnGlnGlyLysThrVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -----cricererecasesescriteciries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     146 rgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeu----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     52 SerValThrMetIleArgGluGlyPheValGluGlnAsnGluIlePro------
                                                                                                                                                                                                                                                                                        2019
20
20
449
94
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1512 ACTTGCGCCCTTTGGGTGCCAACGGTCCAGGATCCCCC 1475
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----ProAlaSerPro 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-10-718-311-16 (1-170) x US-11-293-697-1629 (1-2019)
                                                                                                                                                                                                                                                                                      Length:
Matches:
Conservative:
Mismatches:
Indels:
APPLICANT: HELIX RESEARCH INSTITUTE
TITLE OF INVENTION: Novel full length cDNA
FILE REPERENCE: H1-A0106
CURRENT APPLICATION NUMBER: US/11/293,697
CURRENT FILING DATE: 2005-12-05
PRIOR APPLICATION NUMBER: US/10/108,260
PRIOR PILING DATE: 2002-03-28
SOFTWARE: PATENTING DATE: 2002-03-8
SOFTWARE: PATENTING DATE: 2002-03-8
SOFTWARE: PATENTING DATE: 2002-03-8
SOFTWARE: PATENTING DATE: 2002-03-8
SOFTWARE: PATENTING DATE: 2002-03-8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1671 ccrácradadicragricic------
                                                                                                                                                                                                                                                                                                                                                                                   Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT 11
US-10-524-433-1
; Sequence 1, Application US/10524433
; Publication No. US20060099676A1
                                                                                                                                                                                                                                                                                        25.4
73.00
33.2%
23.8%
                                                                                                                                                                                                                                                                                                                                                               8.2$
                                                                                                                                                                                                                  ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1608 CC-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1851 -----
                                                                                                                                                                                                                                                                                                                          Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                      US-11-293-697-1629
                                                                                                                                                                                                                                                                       Alignment Scores:
                                                                                                                                                                                  LENGTH: 2019
                                                                                                                                                                                                   TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            165
                                                                                                                                                                                                                                                                                                                                                             Query Match:
DB:
                                                                                                                                                                                                                                                                                            No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                        TITLE OF INVENTION: SEQUENCE-DETERMINED DNA FRAGMENTS AND CORRESPONDING POLYPEPTIDES TITLE OF INVENTION: ENCONDED THERBY TITLE OF INVENTION: ENCONDED THERBY FILE REFERENCE: 2750-1579PUSZ CURRENT APPLICATION NUMBER: US/10/953,349 CURRENT FILING DATE: 2004-09-30 NUMBER OF SEQ ID NOS: 40252 SOFTWARE: Patentin version 3.3 SEQ ID NO 34874
                      246
                                                                                                                            151
                                                                                                                                                          307 AGAACAATIGGTTTAAATGGACGCTCTAACACTGTATGGTCCATGTTTGAATCTTTTAGT 366
                                                       134
                                                                                       247 TTATTTACAGCCTCACTGCCCGTAGTCAGACCATTGCCAGGGAACTTCCGCAATGATTTC 306
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   847
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       829
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             828 -----ATGAGCTCGTTGACCGGCC 805
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    90 GlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGlu 109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            110 LeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPheThrSerSerThr 129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    130 LeuThrArgAspPhelleGluIleGlyArgAspAlaGlyLeuTrpGlyArgArgSerArg 149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       70 LeuProleuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAsp 89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         150 LeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuProAlaSerPro 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             135 IleGluIle-----GlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               906 CTGAGGTCGAGCACGTGAGCTTGTCCAGCTTGCCGATCTCCGGCGGGATGCAGGAGGAG
                                                    124 LeuPheThrSerSer-------ThrLeuThrArgAspPhe
                  196 ACACCCATGGCTGAGACCTTGGTTCCTCCCGCGTTGGGACCTAGACCGTTG--
   <u>=</u>
                                                                                                                                                                                                                     367 TATGATGGTAACCCCTTTCTTTTTATTTTACTGTTGATCCCT 408
                                                                                                                                                                                             152 LeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1406
29
21
35
34
4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-718-311-16 (1-170) x US-10-953-349-34874 (1-1406)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               56 IleArgGluGlyPheValGluGlnAsnGluIlePro---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps:
                                                                                                                                                                                                                                                                                                     Sequence 34874, Application US/10953349 Ubblication No. US20060107345A1 GENERAL INFORMATION: APPLICANT: ALEXANDROV, Nickolai et al.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 10
US-11-293-697-1629/c
Sequence 1629, Application US/11293697
Publication No. US20060105376A1
GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            subsp. mays
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          846 ATGCCGCTGTTGAGGAGG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 15
73.00
42.0%
24.4%
8.2%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; ORGANISM: Zea mays
US-10-953-349-34874
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity:
                                                                                                                                                                                                                                                                  RESULT 9
US-10-953-349-34874/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LENGTH: 1406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No.:
                  셤
                                                                                                                                                      g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    g
                                                    ઠે
                                                                                   셤
                                                                                                                      ò
                                                                                                                                                                                             ò
                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
```

φ

```
Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     104 ThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyr 123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              124 LeuPheThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeu 143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TrpGlyArgArgSerArgLeuArgLeuSerGlyLys8FroLeuLeuLeuThrGluLeuPhe 163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    84 IleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSer 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 602 CNTTTTTCNGCCCACAGCCCCGTGTGTGCCAACANAAATTTTGGCNNCANGANGNAAGGN 661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          -----TTGTG 688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PheGluGlnGlnGlyLygThrValSerValThrMetlleArgGluGlyPheValGluGln 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  64 AsnGluIleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGlu 83
                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME/KEY: misc_feature
LOCATION: 548, 567, 567, 583, 603, 610, 636, 647, 648, 651, 654, 656,
LOCATION: 618, 667, 659, 675, 691, 710, 713, 719, 732, 746, 749, 754,
LOCATION: 61, 771, 777, 781, 792, 795, 802, 808, 812, 813, 824, 833,
LOCATION: 841, 842, 856, 861, 866, 871, 873, 874, 875, 882, 887
PEATURE:
NAME INFORMATION: n = A,T,C or G
PEATURE:
NAME CESTURE:
NAME 
GENERAL INFORMATION:
APPLICANT: FUNCELONAL GENETICS, INC.
TITLE OF INVENTION: MARMALIAN GENES INVOLVED IN RAPAMYCIN
TITLE OF INVENTION: RESISTANCE AND TUMORGENESIS: RAPR6 GENES
FILE REPERENCE: 10784-023-228
CURRENT APPLICATION NUMBER: US/10/524,433
CURRENT FILING DATE: 2005-02-15
NUMBER OF SEQ ID NOS: 15
SOFTWARE: FASTSEQ for Windows Version 4.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          966
33
18
18
19
4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-718-311-16 (1-170) x US-10-524-433-1 (1-966)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indel8:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT: HELIX RESEARCH INSTITUTE
TITLE OF INVENTION: Novel full length cDNA
FILE REPERENCE: H1-A0106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; Sequence 200, Application US/11293697; Publication No. US20060105376A1; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OTHER INFORMATION: n = A, T, C or G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          662 TGGGANANAACCCNAAAACTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LeuProAlaSerPro 168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTNCCCTGTTGCCCC 703
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              13.2
71.50
40.8%
26.4%
8.1%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                      TYPE: DNA
ORGANISM: murine
FEATURE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 12
US-11-293-697-200/c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alignment Scores:
                                                                                                                                                                                                                                                                                                                      LENGTH: 966
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-524-433-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
```

```
Sequence 1, Application US/10473691B
Publication No. US20060099202A1
Publication No. US20060099202A1
Publication No. US20060099202A1
GENERAL INFORMATION:
APPLICANT: Nicolette, Charles A.
APPLICANT: Solis, Daniel A.
TITLE OF INVENTION: FOR ELICITING AN ANTI-TUMOR RESPONSE
TITLE OF INVENTION: FOR ELICITING AN ANTI-TUMOR RESPONSE
FILE REFERENCE: 02755/100K313-US1
CURRENT APPLICATION NUMBER: US/10/473,691B
FRIOR PILING DATE: 2002-04-01
PRIOR APPLICATION NUMBER: US 60/280,733
PRIOR APPLICATION NUMBER: US 60/280,733
PRIOR PILING DATE: 2001-03-30
NUMBER OF SEQ ID NOS: 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  755 GACCCTGGATAGGTAATTTGGCTCCTCTGTCC-----TCAGAATCCCTTCAGCAG 705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    704 cadddaccrcacarg------crc 678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           558
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ------ValProValSerThrLeuSerGlyProGluLeuAlaLeuGln 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   84 IleLeuLeuCysAlaAspGlyGluPro-----TrpLeuAlaGlyArgThrVal 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          47 GlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGluIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       67 ProGluGlu-----LeuProLeu---LeuProLysGluSerArgTyrTrpLeuArgGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           617 CTGGGGATCCAACATTCTTCTCAGCCACCTGGCAATTAATGGAGGCTGAGAAGTCCCCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          27 AspProGlnLeuLeuAspTrpLeuLeuGluAspSerMetThrLysArgPheGluGln
                                                                                                                                                                                                                                                                          2490
34490
30
29
                                                                                                                                                                                                                                                                             Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                               US-10-718-311-16 (1-170) x US-11-293-697-200 (1-2490)
CURRENT APPLICATION NUMBER: US/11/293,697
CURRENT FILING DATE: 2005-12-05
PRIOR APPLICATION NUMBER: US/10/108,260
PRIOR FILING DATE: 2002-03-28
NUMBER OF SEQ ID NOS: 5458
SOFTWARE: Petentin Ver. 2.1
SEQ ID NO 200
LENGTH: 2490
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       114 LysLeuGlyLysThrProLeuGly 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  500 GAACCAGGG---ACGCCACTGGGA 480
                                                                                                                                                                                                                                                                               52
71.50
45.4%
31.5%
8.1%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LOCATION: (757) . (3774) OTHER INFORMATION: PUBLICATION INFORMATION:
                                                                                                                                                                        ; TYPE: DNA
; ORGANISM: Homo sapiens
US-11-293-697-200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE: DNA ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                       Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-473-691B-1/c
                                                                                                                                                                                                                                                             Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY: CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH: 4534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQ ID NO 1
                                                                                                                                                                                                                                                                                                                                                             Query Match:
DB:
                                                                                                                                                                                                                                                                                   Pred. No.:
```

```
::: ::: |||
11550 TGTATTTTCATC------GGCCCCTCTGAAGCC-----TGAATGACCAAGGAA 1509
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ValValProValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThr 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ProLeuGlyArgTyrLeuPheThrSerSerThr-------LeuThr 131
AUTHORS: Naumovski, L. and Cleary, M.L.
TITLE: The P53-binding protein 53BP2 also interacts with Bc12 and impedes
TITLE: cell cycle progression at G2/M
JOURNE: 16
VOLUME: 16
PSSUE: 7
PAGES: 3884-3892
DATE: 1996-07
                                                                                                                                                                                                                                                                                                                                                                                       98
                                                                                                                                                                                                                                                                                                                                                                                    80 ---TrpLeuArgGlulleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThr
                                                                                                                                                                                                                                                                                                                                                       1670 GAAGCAGACTTGGCTTGGGAAAAATCTGCATTTGAAGGACTCCAATCAGGGCCAACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            132 ArgAspPhelle-------GlulleGlyArgAspAlaGlyLeuTrp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3105
32
9
35
18
                                                                                                                                                                                          4534
28
12
33
29
5
                                                                                                                                                                                        Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                             US-10-718-311-16 (1-170) x US-10-473-691B-1 (1-4534)
                                                                                                                                                                                                                                                                                                                          GluGluLeuProLeuLeuProLysGluSerArgTyr-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT 14
US-11-293-697-336
i Sequence 336, Application US/11293697
i Publication No. US20060105376A1
i GENERAL INFORMATION:
    APPLICANT: HELIX RESEARCH INSTITUTE
i TITLE OF INVENTION:
    CURRENT APPLICATION NOWEL full length CDNA
i FILE REFERENCE: H1-A0106
i CURRENT PELING DATE: 2005-12-05
i PRIOR FILING DATE: 2005-12-05
i PRIOR FILING DATE: 2002-03-28
i NUMBER OF SEQ ID NOS: 5458
i SOFTWARE: PATENTIN VET. 2.1
i SEQ ID NO 336
i LENGTH: 3105
                                                                                                                 DATABASE ACCESSION NUMBER: Genbank / U58334
DATABASE ENTRY DATE: 1996-07-02
                                                                                                                                                                                                                                                                     Gaps:
                                                                                                                                                                                           124
71.50
39.2%
27.5%
8.1%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               82.2
71.00
43.6%
34.0%
8.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: DNA
ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1388 GGAAGA 1383
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GlyArg 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                     Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-11-293-697-336
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
Pred. No.:
                                                                                                                                                                           Alignment Scores:
                                                                                                                                    ; DATABASE ENTI
US-10-473-691B-1
                                                                                                                                                                                                                                                                                                                                                                                                                                              66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        145
                                                                                                                                                                                                                                                                                                                            68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     119
                                                                                                                                                                                                                                                  Query Match:
DB:
                                                                                                                                                                                        Pred. No.:
                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                       유
                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                           셤
                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  a
```

```
US-10-488-619-48/C

Sequence 48, Application US/10488619

Sequence 48, Application US/10488619

Sequence 48, Application US/10488619

Sequence 48, Application US/1048819

Sequence 48, Application US/1048819

SEQUENCE OF INVENTION: Human Micochondrial DNA Polymorphisms, Haplogroups, Associations

TITLE OF INVENTION: Physiological Conditions, And Genotyping Arrays

FILE REPERENCE: 98-01 W

CURRENT APPLICATION NUMBER: US/10/488,619

CURRENT FILING DATE: 2004-03-01

NUMBER OF SEQ ID NOS: 3040

SOFTWARE: PatentIn version 3.1
                                                          |||||||::|||
1933 CGTTTTGACCAGATCAATGCTGTGGATGAACGATGAATGTCAATGTCAGAAGGAAAAGAG 1992
                                                                                                                                           1993 AATTTTGGCCATCAAAATCCAGCTCCAAGTGAACTT-------AAAGAGCTTATA 2040
                                                                                                                                                                                                   2095 AAGCTCTATGAAAGAATATAGGAAĠŤŤTCTĊĊŤTTTCACĊĊŤŤĂTTTCATTGACTGĆŤĠ 2154
                                                                                                                                                                                                                                                          ----ThrValValProValSerThrLeuSerGlyProGluLeu 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61 lGluGlnAsnGluIle-----770GluGluLeuProLe 72
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21 sGluIleProAlaLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetTh 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  72 uLeuProLys.......GluSerArgTyrTrpLeuArgGlu-IleLeuLeuCys 87
                                    --GlnGlyLysThrValSerValThrMetIleArgGlu
                                                                                                        59 GlyPheValGluGlnAsnGluIleProGluGluLeuProLeuLeuProLysGluSerArg
                                                                                                                                                                                79 TyrTrpLeuArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArg---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2 GlnValTrpHisMetSerHisPro-AlaLeuThrGlnLeuArgAlaLeuArgTyrCysLy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              41 rLysArgPheGluGlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheVa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  498 cadeccrescracecasecarecassecerscrescrescesses
                                                                                                                                                                                                                                                                                                                                                                 2155 GCTGCTTTAAAAAAAAAAAGATCCATTGTACCGTTGTCTT 2196
                                                                                                                                                                                                                                                                                                                                111 AlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeu 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              674
114
153
10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative:
Mismatches:
Indels:
US-10-718-311-16 (1-170) x US-11-293-697-336 (1-3105)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US-10-718-311-16 (1-170) x US-10-488-619-48 (1-674)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ಹ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ΰ
                                  43 ArgPheGluGin-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FEATURE:
NAME/KEY: misc feature
LOCATION: (1)..(674)
OTHER INFORMATION: n is g,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10.3
70.50
37.4%
29.6%
7.9%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: DNA ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score:
Percent Similarity:
                                                                                                                                                                                                                                                        ----- 86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-10-488-619-48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQ ID NO 48
LENGTH: 674
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred. No.:
                                                                 셤
                                                                                                        à
                                                                                                                                       d
                                                                                                                                                                                  ઠ
                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
```

*

Scoring table:

Sequence:

OM protein

Run on:

Total number

Searched:

```
CL650764 PRIO110b
CL688660 PRIO14a D
AG192305 Pan trog1
BZ551713 Pacs1-66
AJ863570 Ralsconia
BZ554576 Pacs2-164
AJ863570 Ralsconia
BZ578851 Rah2 C034
CL696699 PRIO19d BG799182 fp31c10.y
CR861280 Pongo pyg
CW917940 PDCA251TR
BJ932163 BJ932163
DV782699 ASXB560.b
DX39666 111-952-7
CC384679 AGENCOURT
AY850332 Magnaport
BM870249 mgns009xC
CE278012 tigr-gas-BE61827
CC161709 FLD1 J0 D
DA934706 DA934706
BQ611035 VDD208A09
BQ642631 AGENCOURT
CW120546 AGENCOURT
CW120546 AGENCOURT
CW120546 AGENCOURT
CW120546 AGENCOURT
DW809059 OG AB8009
BQ642631 AGENCOURT
CK208417 FGAS02118
AK004672 Mus muscu
AK158339 Mus muscu
AK158339 Mus muscu
BJ5578705 BJ566157
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BF543156 UI-R-AF1-
BM265186 fw63f10.y
BJ974078 BJ974078
BZ578446 msh2_5870
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CL666350 832 bp DNA linear GSS 09-JUL-2004
PRI0152b_A03 - PRI0152b.B21 (832) Mixed stage fosmid library of P.
pacificus var. California Pristionchus pacificus genomic, genomic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CL393085 ZMMBBb019
BU513771 AGENCOURT
CF513983 CAbud0007
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1 (bases 1 to 812)
Srinivasan, J., Otto, G.W., Kahlow, U., Geisler, R. and Sommer, R.J.
AppaDB: an AcedB database for the nematode satellite organism
Pristionchus pacificus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Evolutionary Biology
Max-Planck-Institute for Developmental Biology
Spemannstr. 37-39, Tuebingen D-72076, Germany
Tel: 0049707160139,
Fax: 00497071601498
Email: ralf.sommer@tuebingen.mpg.de
This library was generated at Caltech, Pasadena, USA and end
sequenced at Vancouver, Canada.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Eukaryota, Metazoa, Nematoda, Chromadorea, Diplogasterida,
Neodiplogasteridae, Pristionchus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Nucleic Acids Res. 32 (1), D421-D422 (2004)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALIGNMENTS
                                                                                                                       BG799182
CR861280
CR861280
BJ932163
DJ732666
CO384679
AY850332
BM870249
CC2288046
CV120546
CV120546
CV120546
CO161709
DA934706
BG111035
BG111035
BG111035
                                                    BZ551713
BZ564576
AJ863670
BZ578851
CL696699
                                                                                                                                                                                                                                                                                                                                                                             BQ550781
CK209417
AK004672
AK158339
AK157854
BJ578705
BJ578705
BJ578705
BJ578705
BJ578705
                          CL688660
AG192305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CL666350
CL666350.1 GI:50159025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pristionchus pacificus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pristionchus pacificus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Contact: Sommer RJ
survey sequence.
209
111000
111000
111000
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
10100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      86.5
86.5
86.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 1
CL666350/c
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          JOURNAL
PUBMED
COMMENT
 CL666350 PRI0152b
CL687382 PRI0146c
AG192190 Pan trogI
AG192116 Pan trogl
                                                                                       May 30, 2006, 01:43:54 ; Search time 4389.04 Seconds (without alignments) 3248.869 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                            MQVWHMSHPALTQLRALRYC......RLSGKPLLLTELFLPASPLY 170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Description
           GenCore version 5.1.8
Copyright (c) 1993 - 2006 Biocceleration Ltd
                                                                nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                                                                         48236798 seqs, 27959665780 residues
                                                                                                                                                                                                                                                                                                                    of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                        Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CL666350
CL687382
AG192190
AG192116
                                                                                                                                                                                                     BLOSUM62
Xgapop 10.0 , Xgapext
Ygapop 10.0 , Ygapext
Fgapop 6.0 , Fgapext
Delop 6.0 , Delext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Π
                                                                                                                                                                                                                                                                                                                                               Minimum DB seq length: 0
Maximum DB seq length: 200000000
                                                                                                                                               US-10-718-311-16
887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              13
14
14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            832
828
536
533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     *
Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           69.7
57.3
29.5
26.6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Title:
Perfect score:
```

Database :

618 508 262 236

Score

Result Š.

```
Hominidae; Pan.
                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sequence.
                                                                                                                                                                                                                                   Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            172
                                                                                   source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                 Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE
JOURNAL
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE
JOURNAL
                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AG192190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMMENT
                                                                                                                                                                                                      ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CL687382 82-JUL-2004
PRI0146c_H03_2 - PRI0146c.BR (828) Mixed stage fosmid library of P.
pacificus var. California Pristionchus pacificus genomic, genomic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ThrArgAspPhelleGlulleGlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeu 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             151 ArgLeuSerGlyLysBroLeuLeuLeuThrGluLeuPheLeuProAlaSerProLeuTyr 170
                                                                                                                                                                                                                                                                                                                                                                         GluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGluLeu 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          653
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPheThrSerSerThrLeu 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GCGTTACAAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTCACATCACATCATTA 593
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 533
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             90
Seq primer: T7
Class: fosmid ends.
Location/Qualifiers
1. 0.32
/organism="Pristionchus pacificus"
/organism="genomic DNA"
/strain="California"
/db_xref="taxon:54126"
/clone lib="mixed stage fosmid library of P. pacificus
var. California"
/note="Vector: pEpifos-5 Fosmid vector"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 (Dasses 1 to 828)
Srinivasan, J., Otto, 828)
Srinivasan, J., Otto, W., Kahlow, U., Geisler, R. and Sommer, R.J.
AppaDB: an AcedB database for the nematode satellite organism
Pristionchus pacificus
Nucleic Acids Res. 32 (1), D421-D422 (2004)
                                                                                                                                                                                                                                                                                                                                                                                                                                  CCGCTGCTGCTCCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTTGTTATGTGCCGATGGT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GAACCGTGGCTTGCCGGTCGTACCGTCGTTCCTCTGTCTAAAGCGGGCCGGAGCTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ACCCGGGACTITATICAGATAGGCCGTGATGCCGGGCTGTGGGGGGGCGACGTTCCCGCCTG
                                                                                                                                                                                                                                                                                                                                                      ValSerValThrMetIleArgGluGlyPheValGluGlnAsnGluIleProGluGluLeu
                                                                                                                                                                                                                                                                                                                                                                                                               ProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeuLeuCysAlaAspGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pristionchus pacificus
Pristionchus pacificus
Eukaryota, Metaxoa; Nematoda; Chromadorea; Diplogasterida;
Neodiplogasteridas; Pristionchus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 Biology
Germany
                                                                                                                                                                                                                   832
120
0
0
                                                                                                                                                                                                                   Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Evolutionary Biology
Max-Planck-Institute for Developmental i
Spemannstr. 37-39, Tuebingen D-72076, G
Tal: 00497071601371
Fax: 00497071601498
                                                                                                                                                                                                                                                                               Indels:
                                                                                                                                                                                                                                                                                            Gaps:
                                                                                                                                                                                                                                                                                                                        US-10-718-311-16 (1-170) x CL666350 (1-832)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CL687382.1 GI:50196135
                                                                                                                                                                                                                   1.24e-57
618.00
100.0%
100.0%
69.7%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Contact: Sommer RJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Burvey sequence.
CL687382
                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                     Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                      51
                                                                                                                                                                                                                                                                                                                                                                                                                71
                                                                                                                                                                                                                                                                                                                                                                                                                                                772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      652
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   131
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                 Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               JOURNAL
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RESULT 2
CL687382
                                    FEATURES
                                                                                                                                                                       ORIGIN
```

a

ò

요

ò

a

ઠે

g

ò

ద

ò

ò

```
Park, H., Kim, Y., Kim, S., Han, Y., Woo, T., Park, K., Eun, C.J.,
Hoon, S.T., Chu, M., Kim, H., Joo, S., Kim, C., Song, W. and Yoo, H.
Direct Submission
Submitted (07-JAN-2002) Hong-Seog Park, Korea Research Institute of
Bioscience and Biotechnology (KRIBB), Genome Research Center (GRC);
52, Oun-dong, Yusong-gu, Daejeon 305-333, Korea
(E-mail:redstone@mail.krib:re.kr, VRL:http://phs.grc.kribb.re.kr/,
Tel:82-42-866-7181, Fax:82-42-860-4409)
Clones are derived from the chimpanzee BAC library RP-43 This BAC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AG192190 536 bp DNA linear GSS 06-MAR-2004
Pan troglodytes DNA, clone: RP43-068J06.T7, genomic survey
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    652 CAGCAGGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        66 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu 85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pan troglodytes (chimpanzee)
Ban troglodytes
Eukaryota, Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Euarchontoglires; Primates; Catarrhini;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThr 104
                                                                                                                                                                                                                                                                     P. pacificus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     712 ATCCCCGAAGAACTGCCGCTGCTGCCGAAAGAGTCTCGTTACTGGTTACGTGAAATTTTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerWetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Park, H., Kim, Y., Kim, S., Han, Y., Woo, T., Park, K., Eun, C.J., Hoon, S.T., Chu, M., Kim, H., Joo, S., Kim, C., Song, W. and Yoo, H. BAC end sequences of Library RP-43 (Unpublished 2) (bases 1 to 536)
     end
This library was generated at Caltech, Pasadena, USA and sequenced at Vancouver, Canada. Seq primer: T? Class: fosmid ends.
                                                                                                                                                                                                                                                                     of
                                                                                                   Location/Qualifiers

1. 828
| organism="Pristionchus pacificus" |
| organism="Pristionchus pacificus" |
| forfain="Ganomic DNA" |
| strain="California" |
| db xref="taxon:54126" |
| clone lib="Mixed stage fosmid library of var. California" |
| hote="Vector: pEpifos-5 Fosmid vector"
                                                                                                                                                                                                                                                                                                                                                                                                                               828
98
0
1
0
                                                                                                                                                                                                                                                                                                                                                                                                                             Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-718-311-16 (1-170) x CL687382 (1-828)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AGI92190
AGI92190.1 GI:45224366
GSS.
                                                                                                                                                                                                                                                                                                                                                                                                                             1.93e-45
508.00
99.0%
99.0%
57.3%
```

```
Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  population
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Zea mays
Zea mays
   LIBRARY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CC048367
                                                                                                                                                                                                                                                     Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                                   Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          source
                                                                                                                                                                                                                                                                      No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE
AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT 5
CC048367
LOCUS
                                                                  FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURES
                                                                                                                                                                                                                     ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                         g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Park, H., Kim, Y., Kim, S., Han, Y., Woo, T., Park, K., Eun, C.J.,
Hoon, S.T., Chu, M., Kim, H., Joo, S., Kim, C., Song, W. and Yoo, H.
Direct Submission

Bibert Submission

Submitted (OrJAN-2002) Hong-Seog Park, Korea Research Institute of
Bioscience and Biotechnology (KRIBB), Genome Research Center (GRC);
52, Oun-dong, Yusong-gu, Daejeon 305-333, Korea

(E-mail:redetone@mail:kribb.re.kr, URL:http://phs.grc.kribb.re.kr/,
Tel:82-42-866-7181, Fax:82-42-860-4409)

Clones are derived from the chimpanzee BAC library RP-43 This BAC
end was generated during the R&D process and may have higher chance
PRIMERS
end was generated during the R&D process and may have higher chance
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AG192116 533 bp DNA linear GSS 06-MAR-2004
Pan troglodytes DNA, clone: RP43-068H07.I7, genomic survey
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLygArgPheGlu 45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pan troglodytes
Pan troglodytes
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Euarchontoglires; Primates; Catarrhini;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6 MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Park, H., Kim, Y., Kim, S., Han, Y., Woo, T., Park, K., Eun, C.J., Hoon, S.T., Chu, M., Kin, H., Joo, S., Kim, C., Song, W. and Yoo, H. BAC end sequences of Library RP-43 Unpublished
                                                                                                                                                                             /mol_type="genomic_DNA"
/db_xref="taxon.9598"
/clone="RP43-068006.T7"
/cell_type="lymphocytes"
/clone_lib="RP-43 Chimpanzee Male BAC Library"
                                                                                                                                                                                                                                                                                                                                   536
51
0
0
0
                                                                                                                                                                                                                                                                                                                                                                   Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           504 CAGCAGGAAAAACGGTAAGCGTGACGATGATC 536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          46 GlnGlnGlyLysThrValSerValThrMetIle 56
                                                                           Vector : pBACe3.6
R.Site 1 : ECORI
R.Site 2 : ECORI.
Location/Qualifiers
1 . 536
/organism="Pan troglodytes"
                                                                                                                                                                                                                                                                                                                                     Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-10-718-311-16 (1-170) x AG192190 (1-536)
               of clone tracking errors PRIMERS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AGÎ92116
AGI92116.1 GI:45224292
GSS.
                                                                                                                                                                                                                                                                                                                                   1.92e-18
                                               Sequencing: T7
                                                                                                                                                                                                                                                                                                                                                 262.00
100.08
100.08
29.58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (bases 1 to 533)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hominidae; Pan.
                                                                                                                                                                                                                                                                                                                                                                 Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sequence.
                                                             LIBRARY
                                                                                                                                                                                                                                                                                                                    Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                  Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                  Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 4
AG192116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REFERENCE
                                                                                                                               FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMMENT
                                                                                                                                                                                                                                                                                  ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
```

Sequencing: T7

```
CC048367 linear GSS 20-OCT-2003 01S0415-04B1-E12 UniformMu MuTAIL Library Zea mays genomic clone 01S-415-4-7to12-E12, genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 380 ATGTCACACCCCGCGTTAACGCAACTGCGTGCGCTGCTCTATTGTAAAGAGATCCCTGCC 439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bukaryota, Viridiplantae, Streptophyta, Embryophyta, Tracheophyta, Spermatophyta; Magnoliophyta, Liliopsida, Poales, Poaceae, PACCAD clade, Panicoideae, Andropogoneae, Zea.

(Dases 1 to 515)

Latshaw,S., Tan,B-.C., Settles,A.M. and McCarty,D.R.
Sequence tagged transposon insertions from the UniformMu maize
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence flanking probable Mu insertion site in UniformMu line:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                /sex="male"
/cell_type="lymphocytes"
/clone_lib="RP-43 Chimpanzee Male BAC Library"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /db_xref="taxon:4577"
/clone="01S-415-4-7to12-E12"
/clone_lib="UniformMu MuTAIL Library"
                                                                                                                                                                                                                                                                                                                               533
0
0
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Contact: Donald R. McCarty
Contact: Donald R. McCarty
Plant Molecular and Cellular Biology Program
University of Florida
Pol 110690 Gainesville, FL 32611-0690, USA
Fel: 352-392-1928 x322
Email: drm@ufl.edu
                                                                                                                                                                                                                                                                                                                            Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               500 CAGCAGGAAAAACGGTTATCGTGACGATGATC 532
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         46 GlnGlnGlyLysThrValSerValThrMetIle 56
                                                                                      1. .533
/organism="Pan troglodytes"
/mol_type="genomic DNA"
/db xref="taxon:9598"
/clone="RP43-068H07.T7"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /mol_type="genomic DNA"
/strain="W22 (ACR, bz1-m9)"
/cultivar="UniformMu"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     015-415-4
Class: transposon insertion site.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-10-718-311-16 (1-170) x AG192116 (1-533)
Vector : pBACes.e
R.Site 1 : EcoRI
R.Site 2 : EcoRI.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1. .515
/organism="Zea mays"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CC048367.1 GI:29463258
                                                                                                                                                                                                                                                                                                                               1.45e-15
236.00
92.2%
92.2%
26.6%
```

```
Score:
Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     14681447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Alignment Scores:
Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match:
DB:
                                                                 Query Match:
DB:
                                                                                                                                                                                                                                                                                 RESULT 7
CL688660
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        source
                                                                                                                                                                                                                                                                                                                                                                                  ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
   No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  JOURNAL
PUBMED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score:
   Pred.
                                                                                                                                                                              a
                                                                                                                                                                                                                                                  셤
                                                                                                                                                   ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 셤
                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CL650764 1563 bp DNA linear GSS 09-JUL-2004 PRI0110b_F06 - PRI0110b.B21 (563) Mixed stage fosmid library of P. pacificus var. California Pristionchus pacificus genomic, genomic
             insertions in Mu inactive lines were extracted from the UniformMu maize population by the thermo assymmetric tinterlaced PCR (TAIL) protocol using primers specific for the Mu terminal inverted repeat and a set of 16 arbitrary primers. Amplicons were size enriched using Sepharose 400 spin columns and cloned into the TOPO PCR4 vector."
                                                                                                                                                                                                                                                                                                                                                   452
                                                                                                                                                                                                                                                                                                                                                                                  25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pristionchus pacificus
Pristionchus pacificus
Pristionchus pacificus
Bukaryota; Metazoa, Nematoda; Chromadorea; Diplogasterida;
Noodiplogasteridae; Pristionchus.

(bases 1 to 563)
Srinivasan,J., Otto,G.W., Kahlow,U., Geisler,R. and Sommer,R.J.
AppaDB: an AcedB database for the nematode satellite organism
Pristionchus pacificus
Nucleic Acids Res. 32 (1), D421-D422 (2004)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /db_xref="taxon:54126"
/clone lib="Mixed stage fosmid library of P. pacificus
var. California"
/note="Vector: pEpifos-5 Fosmid vector"
                                                                                                                                                                                                                                                                                                                  MetSerHisProAlaLeuThrGlnLeuArgAlaLeuArgTyrCysLysGluIleProAla
                                                                                                                                                                                                                                                                                                                                                 393 Argicacaccccccccrraacccaacrcccrccccccraricaacacacarccrccc
note="Vector: TOPO-PCR4; DNA flanking Mu transposon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Contact: Sommer RJ
Evolutionary Biology
Max-Planck-Institute for Developmental Biology
Max-Planck-Institute for Developmental Biology
Spemannstr. 37-39, Tuebingen D-72076, Germany
Tel: 00497071601371
Fax: 00497071601498
Email: ralf. sommer@tuebingen.mpg.de
This library was generated at Caltech, Pasadena, USA and end
sequenced at Vancouver, Canada.
Seq primer: T7
Class: fosmid ends.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          end
                                                                                                                                                                515
40
0
1
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /organism="Pristionchus pacificus"
/mol_type="genomic DNA"
/strāin="California"
                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                   Gaps:
                                                                                                                                                                                                                                                                                   US-10-718-311-16 (1-170) x CC048367 (1-515)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CL650764 CL650764.1 GI:50129323
                                                                                                                                                               1,36e-12
209,00
97,6%
97,6%
23.6%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         . . 563
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       survey sequence.
                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CAA 515
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gln 46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        14681447
                                                                                                                                                   Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Alignment Scores:
                                                                                                                                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                                     46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    513
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 6
CL650764
LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                  Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOURNAL
PUBMED
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AUTHORS
TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FEATURES
                                                                                                                   ORIGIN
                                                                                                                                                                                                                                                                                                                  ò
                                                                                                                                                                                                                                                                                                                                                   셤
                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                             a
                                                                                                                                                                                                                                                                                                                                                                                                                                                    ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
```

```
CL688660 838 bp DNA linear GSS 09-JUL-2004 PRI014a_D06_2 - PRI014a_BR (838) Mixed stage fosmid library of P. pacificus var. California Pristionchus pacificus genomic genomic
                                                                                                                                                           152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /db_xref="taxon:54126"
/clone_lib="Mixed stage fosmid library of P. pacificus
var. California"
/note="Vector: pEpifos-5 Fosmid vector"
                                                                                                                                                       Sommer, R.J.
                                                                                                                                                                                                                                                                                                                                                                                                                                             Pristionchus pacificus
Pristionchus pacificus
Pristionchus pacificus
Pristionchus pacificus
Bukaryota; Medazoa; Nematoda; Chromadorea; Diplogasterida;
Neodiplogasteridae; Pristionchus.
1 (bases 1 to 838)
Srinivasan,J., Otto,G.W., Kahlow,U., Geisler,R. and Sommer,R.J AppaDB: an AcedB database for the nematode satellite organism
Pristionchus pacificus
Nucleir Acids Res. 32 (1), D421-D422 (2004)
                                                                                                                                                                                                                           end
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Evolutionary Biology
Max-Planck-Institute for Developmental Biology
Spemannstr. 37-39, Tuebingen D-72076, Germany
Tel: 00497071601391
Email: sax: 00497071601498
Email: ralf.sommerætuebingen.mpg.de
This library was generated at Caltech, Pasadena, USA and
sequenced at Vancouver, Canada.
Seq primer: T7
Class: fosmid ends.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    aLeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLys 42
     563
38
0
0
1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              838
0 0
1 1 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
1. .838
7. organism="Pristionchus pacificus"
/mol_type="genomic DNA"
/strain="California"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length:
Matches:
Conservative:
Mismatches:
Indels:
     Length:
Matches:
Conservative:
Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps:
                                                                                        Gaps:
                                                                                                                         US-10-718-311-16 (1-170) x CL650764 (1-563)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-10-718-311-16 (1-170) x CL688660 (1-838)
                                                                                                                                                                                                                                                                                                                                                                                                 CL688660 CL688660.1 GI:50197738
1.18e-09
183.00
97.4%
97.4%
20.6%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4.46e-08
171.00
94.7%
94.7%
19.3%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Contact: Sommer RJ
                                                                                                                                                                                                                                                                                                                                                                                  survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δ
```

```
106 SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               363 AGCGACAGCGCCTTCGAGCGCGCGATCGAAGTCTGCCGCTATCCGGCGGCCGGTCTG 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ------GlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGly 154
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    26 LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu 45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    66 IleProGluGluLeuProLeuLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu 85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      423 CCCGCCGAGGTCCGCGCCGAGGTCTCTGGGGCCGTCGCTCACGGTTTTCCCGCGGCGCG 482
                                                                                        Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales; Pseudomonadaceae; Pseudomonas.

1 (bases I to 1110)
Spencer, D.H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastings, M., Burns, J.L., Kaul, R. and Olsen, M.V.
Burns, J.L., Kaul, R. and Olsen, M.V.
Whole-Genome-Sequence variation among multiple isolates of Psedomonas aeruginosa library
J. Bacteriol. (2002) In press
Generat: Chris K. Raymond
Genome Center
University of Washington
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         86 LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  46 GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ------deraccechéraccechéraccecrédercécénéere
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ThrserserThrLeuThrArgAspPhelleGluIle----------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /db_xref="taxon:287"
/clone="pacs1-60 3287"
/clone lib="pacs1-60"
/note="clinical isolate 1-60 Whole genomic shotgun
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      144 Grcgaacccrecregaaggcregcagaccrecgaggac---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1110
45
12
56
38
                                                                                                                                                                                                                                                                                                                                                                                                                              /organism="Pseudomonas aeruginosa"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                               Box 352145, Seattle, WA 98105-2145, USA Tel: 2062216954
Fax: 2066827244
Email: craymond@u.washington.edu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LysProLeuLeuLeuThrGluLeuPheLeuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 189 TGCCAGGGCTCGACGTC------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /mol_type="genomic DNA"
/strain="1-60"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-718-311-16 (1-170) x BZ551713 (1-1110)
                                                                                                                                                                                                                                                                                                                                                                    Class: shotgun.
Location/Qualifiers
                       GI:27155321
                                                       Pseudomonas aeruginosa
                                                                          Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1.42e-05
150.00
37.7%
29.8%
   B2551713
B2551713.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match:
DB:
                                                                        ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     . No. :
 ACCESSION
VERSION
KEYWORDS
SOURCE
                                                                                                                                REFERENCE
                                                                                                                                                 AUTHORS
                                                                                                                                                                                                                        JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                                                                                      TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ઠે
                                                                                                                                                                                                                                                                                                                                                                                                   Park, H., Kim, Y., Kim, S., Han, Y., Woo, T., Park, K., Eun, C.J.,
Hoon, S.T., Chu, M., Kim, H., Joo, S., Kim, C., Song, W. and Yoo, H.
Direct Submitssion

Submitted (07-JAN-2002) Hong-Seog Park, Korea Research Institute of
Bioscience and Biotechnology (KRIBB), Genome Research Center (GRC);
52, Oun-dong, Yusong-gu, Daejeon 305-333, Korea
(E-mail:redstone@mail:kribb.re.kr, VRL:http://phs.grc.kribb.re.kr/,
Tel:82-42-866-71B1, Fax:82-44-860-4409)

Clones are derived from the chimpanzee BAC library RP-43 This BAC
end was generated during the R&D process and may have higher chance
PRIMERS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BES51713 110 bp DNA linear GSS 17-DEC-2002 pacs1-60_3287.x1 pacs1-60 Pseudomonas aeruginosa genomic clone pacs1-60_3287, genomic survey sequence.
                                                                                            GSS 06-MAR-2004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Eukaryota, Metazoa, Chordata, Craniata, Vertebrata, Buteleostomi,
Mammalia, Eutheria, Euarchontoglires, Primates, Catarrhini,
                                                                                                                                                                                                                                                                                                            Park, H., Kim, Y., Kim, S., Han, Y., Woo, T., Park, K., Eun, C.J., Hoon, S.T., Chu, M., Kim, H., Joo, S., Kim, C., Song, W. and Yoo, H. Unpublished
                     836
                                                                                        AG192305
440 bp DNA linear GSS 06.
Pan troglodytes DNA, clone: RP43-068M07.T7, genomic survey sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1. .440
/organism="Pan troglodytes"
/mol_type="genomic DNA"
/db_xref="texon:9598"
/clone="RP93-068M07.T7"
/sex="male"
/cell_type="lymphocytes"
/clone_lib="RP-43 Chimpanzee Male BAC Library"
CCTGGATCCGCAACTGCTCGACTGGCTGTTGCTGGAGGATTCCATGACAAAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    440
000
000
000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               409 CTGGATCCGCAACTGCTCGACTGGCTGTTG 438
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          26 LeuAspProGlnLeuLeuAspTrpLeuLeu 35
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-10-718-311-16 (1-170) x AG192305 (1-440)
                                                                                                                                                                                                   Pan troglodytes (chimpanzee)
Pan troglodytes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Vector : pBACe3.6
R.Site 1 : EcoRI
R.Site 2 : EcoRI.
                                                                                                                                                 AG192305
AG192305.1 GI:45224481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2.94e-07
160.00
100.08
100.08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequencing: T7
                                                                                                                                                                                                                                                                                                                                                                                     (bases 1 to 440)
                                                                                                                                                                                                                                                                              Hominidae; Pan.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LIBRARY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match:
DB:
                                                                                                                                          ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOCUS
DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No.:
                                                                                                         DEFINITION
                                                                                                                                                                                                                                                                                                                                                 TITLE
JOURNAL
REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                           REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
                                                   RESULT 8
AG192305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BZ551713
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     유
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
```

302

```
Bacteria; Proteobacteria; Betaproteobacteria; Burkholderiales;
Burkholderiaceae; Ralatonia.
1 (bases 1 to 739)
Munoz-Soriano,V., Arahal,D.R., Terol,J., Buades,C., Perez-Perez,A., Llop,P., Belmonte,U.C.F., Lopez,M. and Perez-Alonso,M.
Random genome sequencing of Ralstonia solanacearum strain IVIA 1602 and comparative analysis with strain GMI1000
                                                                                                                                                              AJ863670 739 bp DNA linear GSS 30-NOV-2005 Ralatonia solanacearum GSS, clone V789R, genomic survey sequence. AJ863670
             -----GlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArgLeuSerGlyLys 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    82 ArgGluIleLeuLeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValPro 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 122 ArgTyrLeuPheThrSerSerThrLeuThrArgAspPheIleGlu------ 136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    323 CATGCGCTGTTCGCCGATCCGCGCTTGCACGGGCGCCCTTCGAGTTTGCCCCAGCTGGAT 264
                                             ::: ||| ::::: CAGCGGTCGAACTGCTCGGTCAG------CAGCGGACC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     102 ValSerThrLeuSerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    50 ThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGluIleProGluGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                            Direct Submission
Submitted (18-NOV-2004) Genetica, Universidad de Valencia, C/
Moliner, 50, Burjassot, Valencia 46100, SPAIN
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          739
739
739
38
38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1. .739
/organism="Ralstonia solanacearum"
/mol_type="genomic DNA"
/strain="IVIA 1602"
/db xref="taxon:305"
/clone="V789R"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length:
Matches:
Conservative:
Mismatches:
                                                                              165
                                                                                             323 GGGGTGCTGGTGGCGGAGGTGTACCTACCG 294
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indel8:
                                                                              156 ProbeuteuleuThrGlubeuPheleuPro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-718-311-16 (1-170) x AJ863670 (1-739)
                                                                                                                                                                                                                       AJ863670.1 GI:82937082
GSS; genome survey sequence.
Ralstonia solanacearum
Ralstonia solanacearum
                                                                                                                                                                                                                                                                                                                                                                                                                2 (bases 1 to 739)
Munoz-Soriano, V.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0.028
118.00
38.9%
25.1%
13.3%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Scores:
               138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                443
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match:
DB:
                                                                                                                                                                                    DEFINITION
ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Bource
                                                                                                                                          RESULT 11
AJ863670/c
LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No.:
                                                                                                                                                                                                                                                                                                                    REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                  REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment
                                                                                                                                                                                                                                                                                                                                                                                                 JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                   TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score:
                                      ద
                                                                                                          윱
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ద
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ò
                                                               GSS 17-DEC-2002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AACCCCTGCCTGGAGGCCTGGCAGACCCTGCGGACGAC-------GAATGC 618
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 87 CysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSer 106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GlyProGlubeuAlabeuGlnLysbeuGlyLysThrProbeuGlyArgTyrbeuPheThr 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                444
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGluGln 46
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         99
                                                   862 bp DNA linear GSS 17-DEC-20
pacs2-164_4819,y2 pacs2-164 Pseudomonas aeruginosa genomic clone
BZ564576
                                                                                                                                                                                                                     1 (bases 1 to 862)
Spencer, D. H., Raymond, C.K., Smith, E.E., Sims, E.E., Hastings, M., Burns, J.L., Kaul, R. and Olsen, M.V.
Whole-Genome-Sequence variation among multiple isolates of Psedemonas aeruginosa library
J. Bacteriol. (2002 In press
Contact: Chris K. Raymond
                                                                                                                                                                      Pseudomonas aeruginosa
Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales;
Pseudomonadaceae; Pseudomonas.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     617 cadddcrcaacdrc------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGluIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeuLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Geérecescerresacéricecerecrécacececececrescréségesacrescrérricase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            127 SerSerThrLeuThrArgAspPheileGluile-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /db_xrefe"taxon:287"
/clone='pac82-164 4819"
/clone_lib="pac82-164"
/note="dilnical isolate 2-164 Whole genomic shotgun
library."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           862
45
111
56
38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length:
Matches:
Conservative:
Mismatches:
Indels:
CTCGGGGTGCTGGTGGCGGGAGTGTACCTACCG 515
                                                                                                                                                                                                                                                                                                                                  Genome Center
University of Washington
Box 352145, Seattle, WA 98105-2145,
Tel: 2062216954
Fax: 2066857244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /mol_type="genomic DNA"
/strain="2-164"
                                                                                                                                                                                                                                                                                                                                                                                                                Email: craymond@u.washington.edu
Class: shotgun.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                1. .862
/organism="Pseudomonas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US-10-718-311-16 (1-170) x BZ564576 (1-862)
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Location/Qualifiers
                                                                                                          BZ564576 GI:27190626
                                                                                                                                                           Pseudomonas aeruginosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0.000212
138.00
37.3%
30.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alignment Scores:
483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       662
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                503
                                                                                                          ACCESSION
VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ..
90
                                                             LOCUS
DEFINITION
                                             BZ564576/c
                                                                                                                                                                                                                        REFERENCE
AUTHORS
                                                                                                                                                                                                                                                                                                     JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                   FEATURES
                                                                                                                                                                                                                                                                     TITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Score:
```

ద.

504

qq

ઠે

ò 셤 ò a

ઠ 요 ેં g

ઠે

69

Oy 74	120 LeuGlyArgTyrLeuPheThrSerSerThrLeuThrArgAspPhelleGluIle 137 139 CCATCAAAGCTGTGCGTATCGCGGCCGGTTCCCGGCGAGGGTCTCTG 858 138 GlyArgAspAlaGlyLeuTrpGlyArgArgSerArgLeuArg	SULT 13 G66699/C CL696699 FINITION PRIO19d B03_2 - PRI019d.BR pacificus var. California I BULYON Sequence. CL696699.1 GI:50218607 CL696699.1 GI:50218607 GSS URCE Pristionchus pacificus Pristionchus pacificus BUKARYOLA; Metazoa; Nematoc Necdiplogasteridae; Pristionchus BUKARYOLA; Metazoa; Nematoc Necdiplogasteridae; Pristionchus FRENCE I (bases 1 to 753) FITLE AppabB: an AccdB database i Pristionchus pacificus Pristionchus pacificus Pristionchus pacificus Pristionchus pacificus Pristionchus pacificus Pristionchus pacificus Pristionchus pacificus Pristionchus Pacificus COURNAL Nucleic Acids Res. 32 (1), PUBMED 14681447 CONTACT. SOMMENT RJ	Evolutionary Biology Byolutionary Biology Ray-Planck-Institute for Developmental Biology Spemannstr. 37-39, Tuebingen D-72076, Germany Tal: 00497071601378 Fax: 00497071601378 Fax: 00497071060138 Email: ralf.sommer@tuebingen.mpg.de This library was generated at Caltech, Pasadena, USA and end sequenced at Vancouver, Canada. Seq primer: T7 Class: fosmid ends. Location/Qualifiers Location/Qualifiers 1. 753 /oration/Qualifiers /mol type="genomic DNA" / ktrain="california" / farain="california" / doxef="texxon:54126" / clone_lib="Mixed stage fosmid library of P. pacificus var. California" / note="Vector: pEpifos-5 Fosmid vector" Alignment Scores: 10.2
CGGGCCCGTGCGGCGCTGGCGCCGCCGCTGGGCGGC 204 ArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeu 159 1166 123	BES78851 mable 6014.x1 msh Pseudomonas aeruginosa genomic clone msh2_6034, genomic survey sequence. BES78851 BES78851. GI:27213912 GSS. Pseudomonas aeruginosa Pseudomonas aeruginosa Bacteria; Proteobacteria; Gammaproteobacteria; Pseudomonadales; Pseudomonasacaes; Pseudomonas. Pseudomonasacaes, Pseudomonas. Pseudomonadacaes, Pseudomonas.	ultiple isolates of Dsa" Whole genomic shotqun	1141 444 524 70 50 6 6 CeuleuLeuGluAspSerMetThr 41 [
137	RESULT 12 BZ578851 LOCUS DEFINITION MSh2 6034.x1 msh Pseudomonas aeruginosa ACCESSION BZ578851.1 G1:27213912 KEYWORDS SOURCE Pseudomonas aeruginosa ORGANISM Pseudomonas aeruginosa Bacteria; Proteobacteria; Gammaproteoba Pseudomonadacaes; Pseudomonas. BREFERENCE 1 (bases 1 to 1141) AUTHORS Spencer, D. H., Raymond, C. K., Smith, B. E.,	Burns, J.L., Kaul, R. and Olsen, M. Mhole-Genome-Sequence variation Psedomonas acruginosa library JOURNAL J. Bacteriol. (2002) In press Contact: Chris K. Raymond Genome Center Washington Box 35145, Seattle, WA 98105-21-12062216554 Fax: 2066857244 Email: craymond@u.washington.edu Class: shotgun. Class: shotgun. Class: shotgun. ATURES ATURES L. 1141 Gource Cordinism="Reudomonas (not the contact of the conta	Alignment Scores: 1.44

ω

```
CAG 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             113 Gln 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DEFINITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT 15
CR861280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CONSRIM
TITLE
JOURNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AUTHORS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REFERENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LOCUS
                                        요
                                                                                                                 요
                                                                                                                                                                                ద
                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                     g
                                                                                                                                                                                                                                                                                                                                                                                          유
                                                                                                                                                                                                                                                                                                                                                                                                                                                          요
                                                                               ò
                                                                                                                                                    ò
                                                                                                                                                                                                                     ò
                                                                                                                                                                                                                                                                                       δ
                                                                                                                                                                                                                                                                                                                                                        δ
                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Actinopterygi; Neopterygii; Teleostei; Ostariophysi; Cypriniformes; Cyprinidae; Danio.

Cypriniformes; Cyprinidae; Danio.

1 (Dases 1 to 581)

Clark, W., Johnson, S.L., Lehrach, H., Lee, R., Li, F., Marra, M., Gady, S., Hillier, L., Kucaba, T., Martin, J., Beck, C., Wylie, T., Underwood, K., Steptoe, M., Theising, B., Allen, M., Bowers, Y., Person, B., Swaller, T., Gibbons, M., Pape, D., Harvey, N., Schurk, R., Kiter, E., Kohn, S., Shin, T., Jackson, Y., Cardenas, M., McCann, R., Washu Zebrafish EST Project 1998

L. Unpublished (1998)

Contact: Stephen L. Johnson
Washington University School of Medicine
4444 Forest Park Parkway, Box 8501, St., Louis, MO 63108, USA
Tel: 314 286 1810
                                                                                                                                                                                                       21-MAY-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Email: zbrafish@watson.wustl.edu
CDNA Library Preparation: Leonard Ira Zon DNA Sequencing by:
Mashington University Genome Sequencing Center Clone distribution:
Genome Systems, St. Louis, Missouri (web address:
www.genomesystems.com) (email contact: info@genomesystems.com) and
www.resgen.com) (email contact: info@ress:
www.resgen.com) (email contact: info@ress:
www.resgen.com) (email contact: info@ress:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /clone_lib="zebrafish gridded kidney"
/note="Organ: kidney; Vector: pBK-CMV; Site_1: EcoRI;
Site_2: xhoI; Oligo dT cDNA library constructed from pooled from pooled from pooled kidney tissue from 300 adult
                                                                                                                                                                                                  BG799182
fp31c10.yl zebrafish gridded kidney Danio rerio cDNA clone
IMAGE:4744722 5' similar to TR:Q9Y4G8 Q9Y4G8 KIAA0313 PROTEIN. ;,
                                                                                                 /tissue_type="kidney pooled from 300 wild type adults"
/lab_host="XLOLR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               581
26
26
34
000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative:
Mismatches:
Indels:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
                 Indels:
                               Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /organism="Danio rerio"
/mol_type="mRNA"
/db_xref="taxon:7955"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    High quality sequence stop: 473. Location/Qualifiers
                                                                 US-10-718-311-16 (1-170) x CL696699 (1-753)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         clone="IMAGE:4744722"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (1-581)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-10-718-311-16 (1-170) x BG799182
                                                                                                                                                                                                                                                                                       BG799182.1 GI:14163514
                                                                                                                                                                                                                                                                                                                        Danio rerio (zebrafish)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sex="mixed"
100.08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               11.7
93.00
45.4
27.0
10.5
               10.78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  . .581
                                                                                                                                                                                                                                                         mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      www.rzpd.de)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Percent Similarity:
Best Local Similarity:
Query Match:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Alignment Scores:
            Query Match:
DB:
                                                                                                                                                                                                                                                                                   VERSION
KEYWORDS
SOURCE
ORGANISM
                                                                                                                                                                                                    LOCUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE
JOURNAL
COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                          REFERENCE
AUTHORS
                                                                                                                                                                  RESULT 14
BG799182
                                                                                                                                                                                                                                                                       ACCESSION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FEATURES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ORIGIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score:
                                                                                                 ò
```

```
Fongo pygmaeus
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Buarchontoglires; Primates; Catarrhini;
Hominidae; Pongo.

I (bases 1 to 4527)
SS Wamburt,R., Heubner,D., Mewes,H.W., Weil,B., Amid,C., Osanger,A.,
Fobo,G., Han,M. and Wiemann,S.

The German cDNA Consortium
Direct Submission

Nucleated (12-NOV-2004) MIPS, Ingolstaedter Landstr.1, D-85764
Neuherberg, GERMANY
Clone from S. Wiemann, Molecular Genome Analysis, German Cancer
Research Center (DKF2); Email s wiemann@dkfz-heidelberg.de;
sequenced by Agowa (Berlin/Germany) within the cDNA sequencing
consortium of the German Genome Project.
This clone (DKF20458N063) is available at the RZDD Deutsches
Ressourcenzentrum fuer Genomforschung GmbH in Berlin, Germany.
Please contact RZPD for ordering:
http://www.rzpd.de/cgi-bin/products/Cl.cgi7CloneID=DKFZp459N063
Further information about the clone and the sequencing project is
available at http://mibs.gff.de/projects/cdna/.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /tissue type="cortex"
/clone lib="459 (synonym: pcor1). Vector pSport1_Sfi; host
DH108; sites SfilA + SfilB"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AS27 bp mRNA linear HTC 12-NOV-2004
Pongo pygmaeus mRNA; cDNA DKFZp459N063 (from clone DKFZp459N063).
CR861280
                                      237 GCCAATAGAGACACCACACAGAGAAGCTGCCAATCTAGCCATAAAAGAGTTTGGCTTG 296
                                                                                                                                                                                                                                                                                                                                                                                                          94 ---LeuAlaGlyArgThrValValProValSerThrLeuSerGlyProGluLeuAlaLeu 112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                36 LeuGluAspSerMetThrLysArg-------PheGluGlnGlnGlyLys 49
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              62 GluGlnAsnGluIleProGluGluLeuProLeuLeuProLys------GluSer 77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     78 ArgTyrTrpLeuArgGluIleLeu------LeuCysAlaAspGlyGluProTrp 93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7 SerHisProAlaLeuThr-----GinLeuArgAlaLeuArgTyrCysLysGluIlePro
                                                                                                                          AspTrpLeuLeu
                                                                                                                                                                                                                                                                                                                                                                       50 ThrValSer-------ValThrMetIleArgGluGlyPheVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /dev_stage="adult"
/note="ATPase, H+ transporting, lysosomal accessory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /organism="Pongo pygmaeus"
/mol_type="mRNA"
/db_xref="taxon:9600"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /clone="DKFZp459N063"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pongo pygmaeus (orangutan)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CR861280.1 GI:55733331
                                                                                                                      25 AlaieuAspProGlnLeuleu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1. .4527
```

```
fgene="DKFZp459N063"
/codon_start=1
/codon_start=1
/product=hypothetical_protein"
/protein_id="Ch493348.1"
/db_xref="G1:5573332"
/db_xref="G1:55733332"
/db_xref="G1:5573332"
/db_xref="G1:55733332"
/db_xref="G1:5573332"
/db_xref="G1:5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3271 TGTGAGTTACAACGACACCGCTCCCCGGATCCTGTGTTGTGGCCCAAAACTTCTCTGTGGC 3330
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        3331 GTACAAGGACCAGTGGGAGGACCTGACTCCCCTCACCTTTGGGGTGCAGGAGCTCAACCT 3390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3451 TGGTACCACAGTGACATTCAAGGTCATTCTGGCCAACCGCCTCTACCCAGTATCTGCCCG 3510
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 3511 GCACTGGTTTACCATGGAGCGCCTCGAAGTCCACAGCAATGGCTCGGTCGCCTACTTCAA 3570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3625 CAGCCTGAG-----CAAGAAGGCAGTCTCCTCGTGGCCCGCAC----- 3663
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3715 -----CAACGTAATGGGGGAGCAGTTCTCCTACGCCAGCGACTGTGCCAGCTTCTT 3765
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           3664 GCAGCCCTCCTCGCAGAIGATGCTTCAGGACTTCCAGAICCAGGCTTT----- 3714
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               127 SerSerThrieuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGlyArg 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                107 GlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPheThr 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  87 CysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeuSer 106
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 147 ArgSerArgLeuArgLeuSerGlyLysProLeuLeu-----LeuThrGluLeuPhe 163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   31 ----- 31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               32 AspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGluGlnGlnGlyLysThrVal 51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 52 SerValThrMetIleArgGluGlyPheValGluGlnAsnGluIleProGluGluLeuPro 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4 TrpHisMetSerHisProAlaLeuThrGlnLeuArgAlaLeu------17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 18 ------ArgTyrCysLysGluIleProAlaLeuAspProGlnLeuLeu-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4527
48
23
76
55
protein precursor (Homo sapiens)"
1. .4527/gene="DKFZp459N063"
17. .367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-10-718-311-16 (1-170) x CR861280 (1-4527)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               252
92.50
35.1%
23.8%
10.4%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              3766 CICCCC 3771
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   164 LeuPro 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ..
80
..
                                     gene
                                                                                               CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     \dot{\delta}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         à
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ð
```

Search completed: May 30, 2006, 04:08:17 Job time: 4396.04 secs

```
240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAGCAGGAAAAACGGTAAGCGTGACGATGATCCGCGAAGGGTTTGTCGAGCAGAATGAA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LeuCysAlaAspGlyGluProTrpLeuAlaGlyArgThrValValProValSerThrLeu 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SerGlyProGluLeuAlaLeuGlnLysLeuGlyLysThrProLeuGlyArgTyrLeuPhe 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ThrSerSerThrLeuThrArgAspPheIleGluIleGlyArgAspAlaGlyLeuTrpGly 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ArgArgSerArgLeuArgLeuSerGlyLysProLeuLeuLeuThrGluLeuPheLeuPro 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CGACGTTCCCGCCTGCGATTAAGCGGTAAACCGCTGTTGCTAACAGAACTGTTTTTACCG 480
                                                                                                                  Transgenic plants with increased content of resistance factor - contg. bacterial DNA coding for enzyme catalysing prodn. of resistance factor, . e.g. antiviral p-hydroxy-benzoic acid.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GlnGlnGlyLysThrValSerValThrMetIleArgGluGlyPheValGluGlnAsnGlu 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           lleProGluGluLeuProLeuProLysGluSerArgTyrTrpLeuArgGluIleLeu 80
                                                                                                                                                                                                                                                                                                   Transgenic plants containing a bacterial gene which encodes an enzyme able to catalyse prodn. of an antiviral, bactericidal, fungicidal or insecticidal factor are new. A preferred gene is ubic from E.coli (AAQ92409) which codes for chorismate-pyruvate lyase (ARY4742). The lyase catalyses conversion of chorismate to p-hydroxybenzoic acid and transgenic tobacco plants which express the active enzyme are resistant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TTATGTCCCGATGGTGAACCGTGGCTTGCCGGTCGTACCGTCGTTCTTGTTGTCACGTTA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              acarcarciacarria accessio a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a representa a rep
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LeuAspProGlnLeuLeuAspTrpLeuLeuLeuGluAspSerMetThrLysArgPheGlu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AGCGGGCCGGAGCTGGCGTTACAAAATTGGGTAAAACGCCGTTAGGACGCTATCTGTTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Seguence 495 BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    495
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length:
Matches:
Conservative:
Mismatches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-10-718-311-4 (1-165) x AAQ92409 (1-495)
                                                                                                                                                                                                                                          Claim 3; Page 5; 7pp; German.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AlaSerProLeuTyr 165
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GCGTCACCGTTGTAC 495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6.52e-89
854.00
100.0%
100.0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           to tobacco mosaic virus
                            WPI; 1995-186908/25.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Percent Similarity:
Best Local Similarity:
                                                         P-PSDB; AAR74742
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              361
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   421
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            101
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            481
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   161
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT 2
엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      원
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     셤
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ð
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                요
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ठे
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ઠે
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ઠે
```

BP

ABA91837 standard; DNA; 495

15-MAY-2002 (first entry)

ABA91837;

ABA91837 ID ABA9 XX XX ABA9 AC ABA9 XX DT 15-P

```
The present sequence is that of the coding region of the Escherichia coll strain W310 ubiC gene in expression construct pBT24a. The gene encodes chorismate pyravate lyses (CPL, see AAMS0968). It was obtained by PCR amplification of strain W310 genomic DNA using primers (see ABA91839-40) based on the published B. coll ubiC gene. The CPL open reading frame is used in an expression of seet along primers (see ABA91839-40) comprises the CPL coding sequence doring the high-level production of p-hydroxybenzoic acid (pHBA) in green plants. The eassette also has a sequence encoding sequence operably linked to a promoter capable of driving protein expression in higher plants. The cassette also has a sequence encoding a chloroplast transit peptide, its natural cleavage site, and a small portion of a transit peptide, its natural cleavage of the content to the chloroplast targeting sequence targets the foreign protein to the chloroplast targeting sequence targets the foreign protein to the chloroplast and aids in its uptake into the organelle. The cleavage site is unique to the transit peptide, and cleavage of the cleavage site is unique to the transit peptide, and cleavage of the chievest protein encoded by the cassette at this site releases a novel plant comprising the CPL enzyme activity, comprising the mature CPL conzyme and a small portion of transit peptide donor (see AAMS0961). A plant comprising the CPL expression cassette is claimed, and may be
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Producing para-hydroxy benzoic acid in green plant, comprises expression of unique expression cassette containing gene encoding chorismate pyruvate lyase operably linked to specific chloroplast targeting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 soybean, rapesed, sunflower, cotton, corn, tobacco, alfalfa, wheat, barley, oats, sorghum, rice, Arabidopsis, sugarbeet, sugarcane, canola, millet, bean, pea, rye, flax or a forage grass. PHBA is a monomeric component of liquid crystal polymers which have application in the automotive, electrical and other industries
                                                                                                                                                                                                                                   /product= "Chorismate_pyruvate_lyase"
/note= "the CDS does not include a stop codon"
                                                         Chorismate pyruvate lyase; CPL; enzyme; p-hydroxybenzoic acid;
                  Escherichia coli chorismate pyruvate lyase gene coding region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BP; 112 A; 122 C; 141 G; 120 T; 0 U; 0 Other;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      495
165
0
0
0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-10-718-311-4 (1-165) x ABA91837 (1-495)
                                                                                                                                                                                                                                                                                                                                                                                                                                                        (DUPO ) DU PONT DE NEMOURS & CO E I.
                                                                                                                                                       Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Viitanen PV;
                                                                           transgenic plant; ubic; gene; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Claim 4; Page 55; 60pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                   02-JUN-2000; 2000US-0209854P.
                                                                                                                                                                                                                                                                                                                                                                            22-MAY-2001, 2001WO-US016661
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6.52e-89
854.00
100.0%
100.0%
                                                                                                                                                                                            /partial
                                                                                                                                                                                                                                 product=
                                                                                                                                                                              ...495
/*tag=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Van Dyk DB,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 2002-226795/28.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Best Local Similarity:
                                                                                                                  Escherichia coli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P-PSDB; AAMS0958
                                                                                                                                                                                                                                                                                                WO200194607-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 495
                                                                                                                                                                                                                                                                                                                                       13-DEC-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Meyer K,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match:
DB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ..
00
..
                                                                                                                                                       Key
```

THIS PAGE BLANK (USPTO)